Copyright © Nokia Mobile Phones

Contents

System Module GR4 8–5
Technical Summary 8–5
External and Internal Connectors 8–5
Bottom Connector X100 8–5
UIF Module Connector X196 8–7
Baseband Block 8–8
List of Submodules 8–8
Modes of Operation 8–8
Analog Control Channel Mode (ACC) 8–8
Out of Range Mode (OOR) 8–8
Analog Voice Channel Mode (AVCH) 8–9
Digital Control Channel Mode (DCC) 8–9
Digital Traffic Channel Mode 8–9
Supply voltages and power consumption 8–9
Audio Control Signals 8–10
Current Consumption 8–10
Clocking Schemes 8–11
Reset and Power Control 8–12
Watchdog System 8–13
CTRLU 8–14
Introduction 8–14
Input Signals of CTRLU 8–14
Outputs Signals of CTRLU 8–15
Bidirectional Signal of CTRLU 8–16
Block Description of CTRLU 8–16
Behaviour in Different Modes 8–17
Main Components 8–18
PWRU 8–19
Input Signals of PWRU 8–19
Output Signals of PWRU 8–19
Block Description of PWRU 8–19
Main Components of PWRU 8–20
DSPU 8–21
Input Signal of DSPU 8–22
Output signal of DSPU 8–22
Bidirectional signal of DSPU 8–22
Block Description of DSPU 8–22
Modes of Operation 8–24
Main Components of DSPU 8–24
AUDIO 8–25
Input signal of AUDIO 8–25

Copyright © Nokia Mobile Phones

Output signal of AUDIO 8–25
Block Description of AUDIO 8–26
Main Componets of AUDIO 8–26
ASIC 8–27
Input Signals of ASIC 8–27
Output signals of ASIC 8–28
Bidirectional signals of ASIC 8–29
Block Description of ASIC 8–29
Main Components of ASIC 8–29
RFI 8–30
Inputs signals of RFI 8–30
Output signals of RFI 8–31
Bidirectional of RFI 8–31
Main Components of RFI 8–31
RF Module Block 8–32
List of Functional Blocks 8–32
Constructions and Connections 8–32
RF Frequency Plan 8–32
Functional Description 8–33
Receiver 8–33
Frequency Synthesizers 8–33
Transmitter 8–34
Modes of Operation 8–35
Analog control channel mode 8–35
Analog out of range mode and extended stby mode . . 8–35
Analog voice channel mode 8–35
Digital traffic channel mode 8–35
Software Compensations 8–35
Power Levels (TXC) vs. Temperature 8–35
Power Levels (TXC) vs. channel 8–35
Power Levels vs. Battery Voltage 8–36
Power Up/Down ramps 8–36
Digital Mode RSSI 8–36
RF Characteristics 8–36
Receiver 8–36
Duplex Filter 8–36
Pre–amplifier 8–36
RX Interstage Filter 8–36
First mixer 8–36
First IF amplifier 8–36
First IF filter 8–37
2nd first IF amplifier 8–37
Receiver IF circuit, RX part of CRFRT (digital mode) . 8–37
Second IF filter 8–37

Copyright © Nokia Mobile Phones

FM IF circuit (analog mode) 8–37
Transmitter 8–37
Modulator Circuit, TX part of CRFRT 8–37
Unconversion mixer 8–37
TX buffers 8–38
TX interstage filter 8–38
Power amplifier 8–38
Power control circuitry 8–38
Synthesizers 8–38
Reference oscillator 8–38
YHF synthesizer 8–38
UHF synthesizer 8–39
UHF buffers 8–39
PLL circuit 8–39
Baseband Block Diagram 8–40
RF Block Diagram 8–41
RF Block Interconnection Diagram (GP4) (Version 5.63 ; edit 120) 8–42
Baseband Power Distribution Diagram 8–43
RF Power Disribution Diagram 8–44
Parts List of GR4 EDMS Issue: 6.7 Code: 0200674 8–45
Parts List of GP4 EDMS Issue: 7.0 Code: 0200900 8–57
Parts List of GP4 (EFR) EDMS Issue: 3.0 Code: 0201114 8–68

Schematic Diagrams: GR4, GP4
Block Diagram 8A–1
GR4: Block Diagram of System Blocks (V. 4.24 Edit: 185) layout 12 . . . 8A–2
GR4: Circuit Diagram of CTRLU Section (V. 5.01 Edit: 167) layout 13 . 8A–3
GR4: Circuit Diagram of PWRU Section (V. 5.01 Edit: 114) layout 13 . . 8A–4
GR4: Circuit Diagram of DSPU Section (V. 5.01 Edit: 157) layout 13 . . 8A–5
GR4: Circuit Diagram of Audio Section (V. 5.01 Edit: 79) layout 13 . . . . 8A–6
GR4: Circuit Diagram of ASIC Section (V. 5.01 Edit: 182) layout 13 . . . 8A–7
GR4: Circuit Diagram of RFI Section (V. 5.01 Edit: 117) layout 13 . . . . . 8A–8
GR4: Circuit Diagram of Receiver Section (V. 5.01 Edit: 166) layout 13 8A–9
GR4: Circuit Dgrm of Synthesizer Section (V.5.01 Edit:110) layout 13 . 8A–10
GR4: C. D. of Transmitter and Mod. Sect. (V.5.01 Edit:404) layout 13 . 8A–11
GP4: Block Diagram of System Blocks (V. 5.63 Edit: 205) layout 06 . . 8A–12
GP4: Circuit Diagram of CTRLU Section (V. 5.63 Edit: 188) layout 06 8A–13
GP4: Circuit Diagram of PWRU Section (V. 5.63 Edit: 131) layout 06 . 8A–14
GP4: Circuit Diagram of DSPU Section (V. 5.63 Edit: 171) layout 06 . . 8A–15
GP4: Circuit Diagram of Audio Section (V. 5.63 Edit: 93) layout 06 . . . 8A–16
GP4: Circuit Diagram of ASIC Section (V. 5.63 Edit: 202) layout 06 . . 8A–17
GP4: Circuit Diagram of RFI Section (V. 5.63 Edit: 132) layout 06 . . . . 8A–18
GP4: Circuit Diagram of Receiver Section (V. 5.63 Edit: 194) layout 06 8A–19
GP4: Circuit Dgrm of Synthesizer Section (V.5.63 Edit:131) layout 06 8A–20

Copyright © Nokia Mobile Phones

GP4: C. D. of Transmitter and Mod. Sect. (V.5.63 Edit:431) layout 06 . 8A–21
GP4: Block Diagram of System Blocks (V. 8.61 Edit: 206) layout 06 . . 8A–22
GP4: Circuit Diagram of CTRLU Section (V. 8.61 Edit: 189) layout 06 8A–23
GP4: Circuit Diagram of PWRU Section (V. 8.61 Edit: 132) layout 06 . 8A–24
GP4: Circuit Diagram of DSPU Section (V. 8.61 Edit: 173) layout 06 . . 8A–25
GP4: Circuit Diagram of Audio Section (V. 8.61 Edit: 94) layout 06 . . . 8A–26
GP4: Circuit Diagram of ASIC Section (V. 8.61 Edit: 283) layout 06 . . 8A–27
GP4: Circuit Diagram of RFI Section (V. 8.61 Edit: 133) layout 06 . . . . 8A–28
GP4: Circuit Diagram of Receiver Section (V. 8.61 Edit: 195) layout 06 8A–29
GP4: C. D. of Synthesizer Section (V. 8.61 Edit: 132) layout 06 . . . . . 8A–30
GP4: C. D. of Transmitter and Mod. Sect. (V.8.61 Edit:432) layout 06 . 8A–31
Layout Diagram of GR4 side 1 (version 13) 8A–32
Layout Diagram of GR4 side 2 (version 13) 8A–33
Layout Diagram of GP4 side 1 (version 06) 8A–34
Layout Diagram of GP4 side 2 (version 06) 8A–35
Layout Diagram of GP4 side 1 (EFR 8.61 version 06) 8A–36
Layout Diagram of GP4 side 2 (EFR 8.61 version 06) 8A–37

Copyright © Nokia Mobile Phones

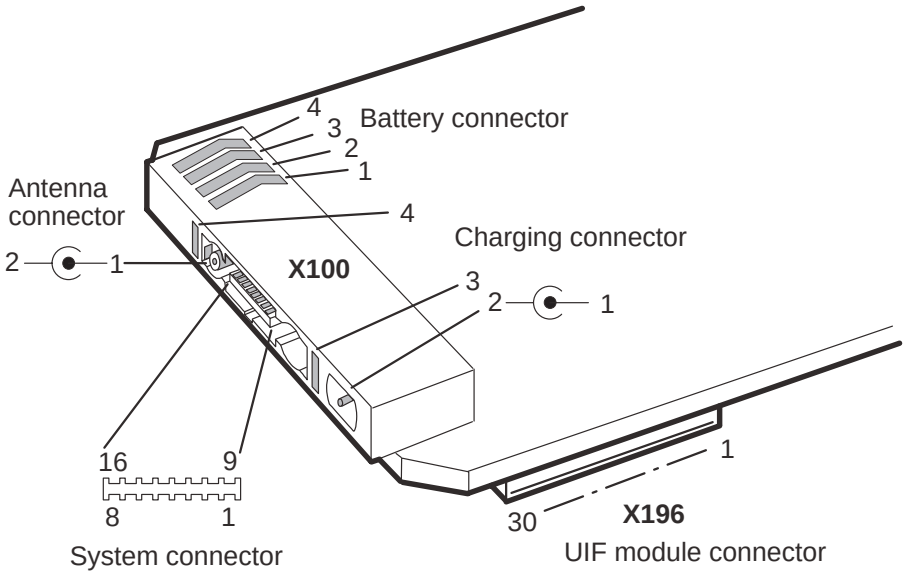
System Module GR4

Technical Summary

All functional blocks of the baseband are mounted on a single multi layer printed circuit board. This board contains also RF–parts. The chassis of the radio unit contains separating walls for baseband and RF. All components of the baseband are surface mountable. They are soldered using reflow. The connections to accessories are fed through the bottom connector of the radio unit. The connections to User Interface –module (UIF) are fed through a flex foil connector. There is no physical connector between RF and baseband.

External and Internal Connectors

The system module has two connector, external bottom connector and internal UIF module connector.



D0000323

Bottom Connector X100

System Connector

Pin:	Name:	Description:
1, 9	LGND	Digital ground. Separated with a choke from PCB–gound
2	XMIC_JCONN	External audio input from accessories or handsfree microphone.
3	AGND	Analog ground.
4	TDA	DBUS transmitted data.

Copyright © Nokia Mobile Phones

5	M2BUS	Serial bidirectional data and control between the handportable and accessories.
6	HOOK/RXD2	HOOK indication. The phone has a 100 kΩ pull–up resistor.
7	PHFS/TXD2	Handsfree device power on/off, data to flash programming device.
8, 16	VCHAR	Battery charging voltage.
10	XEAR_HFJPWR	External audio output to accessories or handsfree speaker.
11	DSYNC	DBUS frame sync DBUSCLKEN
12	RDA	DBUS received data
13	BENA	Booster enable, TX–timing control (open drain, TX–power is on when BENA is low)
14	VF	Programming voltage for FLASH.
15	DCLK	DBUS data clock. DBUSCLK

Battery Connector

Pin:	Name:	Description:
1	VBAT	Battery voltage
2	BSI	Battery size identification
3	BTEMP	Battery temperature sense
4	GND	Ground

Charging Connector

Pin:	Name:	Description:
1	VCHAR	Battery charging voltage
2	GND	Ground
3	VCHAR	Battery charging voltage
4	GND	Ground

Antenna Connector

Pin:	Name:	Description:
1	RF EXT	External antenna signal
2	GND	Ground

Copyright © Nokia Mobile Phones

UIF Module Connector X196

Pin:	Name:	Description:
1	VL1	Logic supply voltage 4.65 V
2,17,20	GND	Ground
3,30	VBAT	Battery voltage
4	KEYLIGHT	Backlights on/off
5–11	UIF(0;6)	Lines for keyboard write and LCD–controller control
12	UIF7	LCD lights on/off
13–16	COL(0;3)	Lines for keyboard read
18	MICP	Microphone (positive node)
19	MICN	Microphone (negative node)
20	EARP	Earpiece (positive node)
21	EARN	Earpiece (negative node)
23	VA2	Analog supply voltage 4.65 V
24	ONKEYX	Power key (active low)
26	MIC_EN	Microphone bias enable (open drain, active low)
29	BUZZER	Buzzer control

Copyright © Nokia Mobile Phones

Baseband Block

Baseband block is designed for a handportable phone, that operates in DAMPS system. The purpose of the baseband module is to control the phone and process audio signals to and from RF. The module also controls the user interface.

List of Submodules

CTRLU	Control Unit for the phone
PWRU	Power supply
DSPU	Digital Signal Processing block
AUDIO	Audio coding
ASIC	UDSA2 – asic
RFI	RF – baseband interface

These blocks are only functional blocks and therefore have no type nor material codes.

Modes of Operation

There are the following operating modes in the phone: Analog control channel, Analog speech channel, Digital control channel, Digital traffic channel and out–of–range.

Analog Control Channel Mode (ACC)

Radio unit is ready for reception on analog control channel. Most of the time only RX–modem of UDSA2–asic and clock for it are operational. All other circuitry is powered down. Sometimes UDSA2 detects incoming data and wakes up the MCU to read it. MCU determines whether the data is meant for that particular phone or not. If the call is detected, the phone moves to analog voice channel or digital traffic channel mode depending on the orders by the base station. Occasionally the phone communicates with the base station and then the phone must be powered up.

Out of Range Mode (OOR)

All circuitry is powered down except a timer in UDSA2. After the timer has elapsed the phone tries to establish the connection to base station. If it succeeds, the phone goes to analog control channel mode. If the connection can not be established the phone will stay in out of range mode, start the counter in ASIC and power down all other circuitry.

Copyright © Nokia Mobile Phones

Analog Voice Channel Mode (AVCH)

The phone is capable for analog receiving and transmitting. All circuitry is powered up except digital rx parts. MCU is in charge of the signalling between the phone and the base station.

Whenever possible the circuits are put to sleep or standby.

Digital Control Channel Mode (DCC)

On digital control channel (DCC) DSPU receives the paging information from the Paging channel (PCH) or Broadcasting channel (BCCH). DSPU sends messages to MCU for processing them.

Phone is in sleep between pagings.

From DCC phone may be commanded to analog control channel or to analog or digital traffic channel

Digital Traffic Channel Mode

The phone is capable for receiving and transmitting on digital traffic channel. All circuitry is powered up, except FM detector.

On digital trafic channel DSPU processes speech signal in 20 ms time slots. DSPU performs the speech and channel functions in time shared fashion and sleeps whenever possible. Rx and tx are powered on and off according to the slot timing. MCU is waken up mainly by DSPU, when there is signalling information for the CS.

Supply voltages and power consumption

Line symbol	Minimum	Typ/nom	Maximum	Unit/notes
VBAT	5.3 V	6.0 V	9.0 V	
VCHAR	11.0 V		13.0 V	
VA1	4.5 V	4.65 V	4.8 V	Imax = 40 mA
VA2	4.5 V	4.65 V	4.8 V	Imax = 80 mA
VL1	4.5 V	4.65 V	4.8 V	Imax = 150 mA
VL2	4.5 V	4.65 V	4.8 V	Imax = 150 mA
VREF	4.6 V	4.65 V	4.8 V	Imax = 5 mA
VF	11.4 V	12 V	12.6 V	

Copyright © Nokia Mobile Phones

Audio Control Signals

The nominal values correspond ±2.9 kHz peak deviation.

Line symbol	Minimum	Typ./nom.	Maximum
MICP, MICN			106.1 mV_{rms}
EARP, EARN	43.7 V_{rms}		1.384 V_{rms}
EXTEAR • min d.c. level 2.0 V		158 mV_{rms}	600 mV_{rms}
XMIC • min d.c. level 2.0 V 11 kΩ pull–down resistor in HP		71 mV_{rms}	1026 mV_{rms}

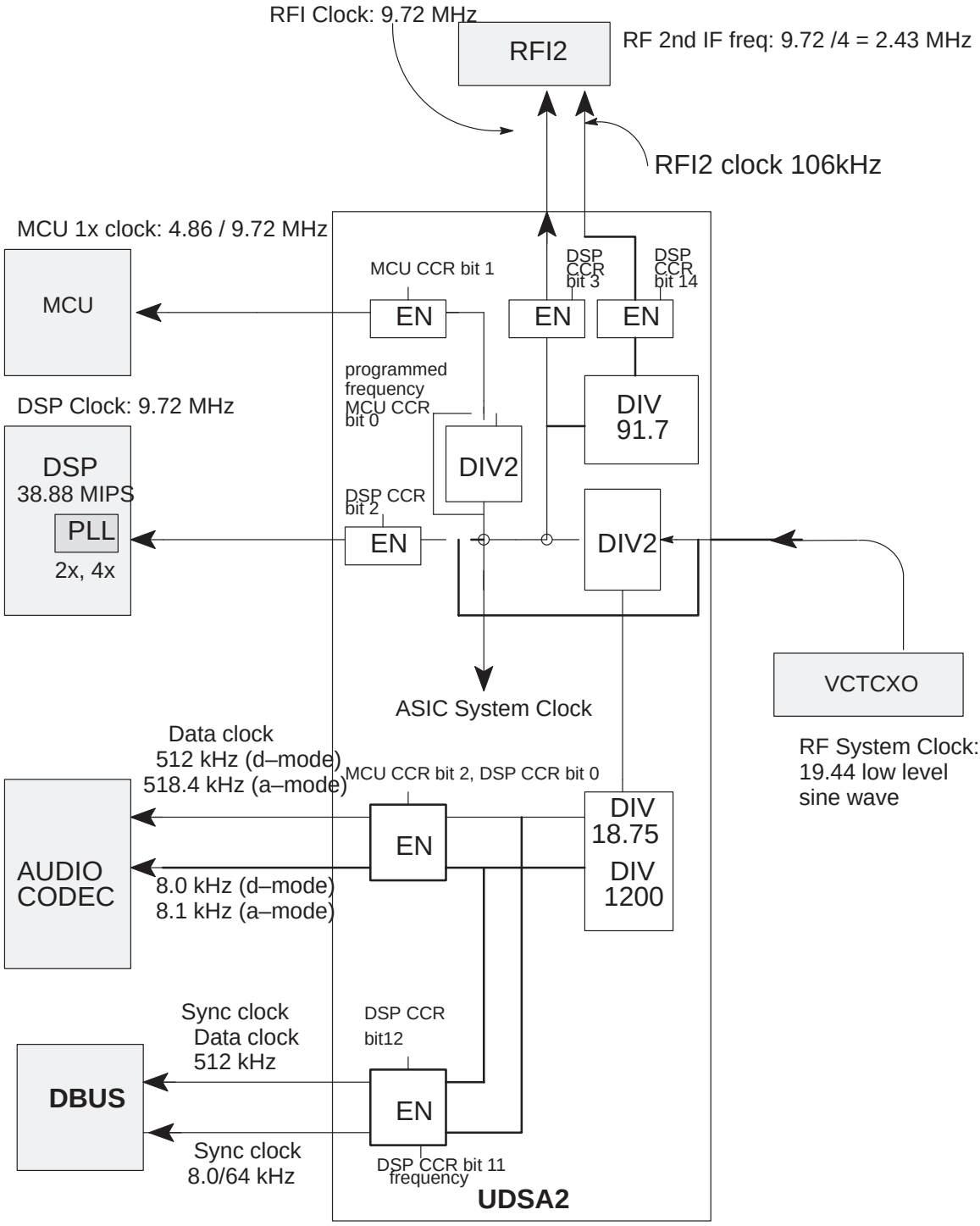
Current Consumption

State	VL1/mA	VL2/mA	VA1/mA	VA2/mA
NOSERV	12	1.2	<50 µA	<50 µA
SERV Ana	18	1	13 µA	140 µA
Analog call	43	50	8.4	11
Digital call	43	63	4.6	11

VL1 = MCU, SRAM, FLASH, ASIC, RFI, EEPROM, UI
VL2 = DSP1, DSP–rams
VA1 = RFI
VA2 = AUDIO codec, UI

Copyright © Nokia Mobile Phones

Clocking Schemes



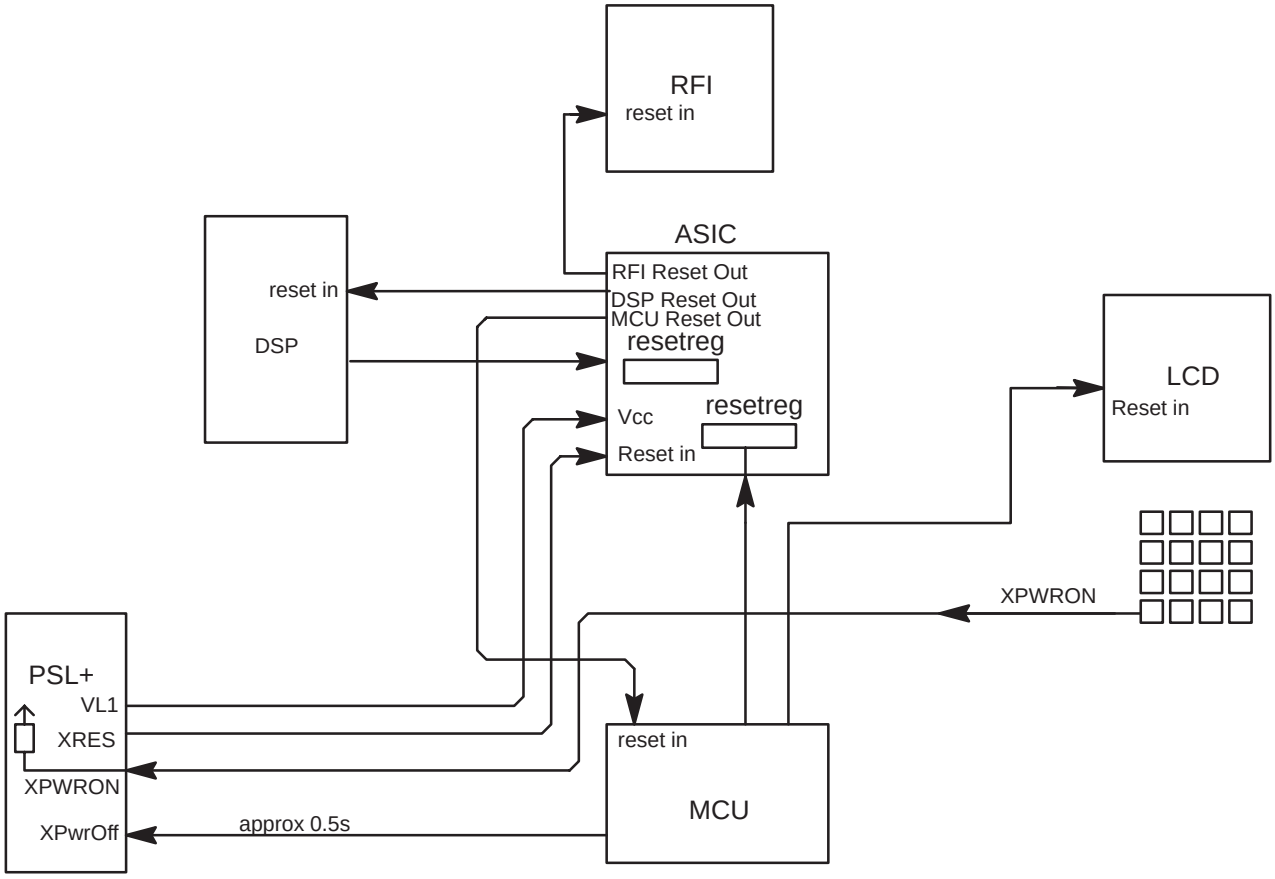
UDSA2 uses an unbuffered clock from the VCTCXO. MCU can select its clock frequency: 4.86 MHz, 9.72 or 19.44 MHz (default 9.72 MHz). DSP uses internal 4X PLL for generating the 38.88 MHz. Audio codec uses different clocks in A– and D–mode. VCTCXO oscillator is running all the time.

All of the clock outputs can be disabled/enabled. DSP controls the DSP clock and MCU clock is controlled by MCU. If DSP is in sleep mode, MCU can wake

Copyright © Nokia Mobile Phones

it up by sending a PIO–message. MCU and DSP clocks are also controlled by the sleep clock.

Reset and Power Control



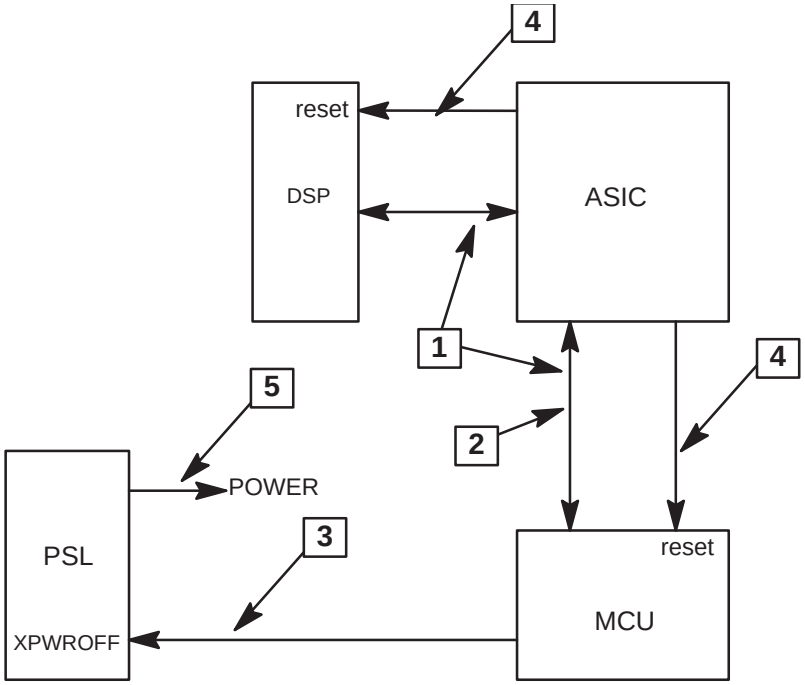
The supply power is switched on by PWR key on keyboard. All devices are powered up at the same time by PSL+.

PSL+ supplies the reset to ASIC at power up. ASIC starts the clocks to DSP and MCU. After 100 ms delay the PSL+ release the reset to ASIC, and ASIC releases the resets to all circuitry. Power up reset resets MCU , RFI and DSP.

For powering of the phone, the user pushes PWR–key. MCU detects that it is pushed. After that the MCU cuts the eventual ongoing call, exits all tasks, acts dead to the user and leaves PSL+ watchdog without resets. After power–down delay PSL+ cuts the supply voltage from all the circuitry.

Copyright © Nokia Mobile Phones

Watchdog System



Normal operation:

1	MCU tests DSP
2	MCU updates ASIC watchdog timer (> 2 Hz)
3	MCU pulses the XPWROFF input on the PSL+ (about 2 Hz)

Failed operation:

4	SIC resets MCU and DSPs (After about 0.5 sec failure)
5	PSL+ switches the power off (After 0.750 ms failure)

Copyright © Nokia Mobile Phones

CTRLU

Introduction

The Control block provides a mastercomputer unit (MCU) and it's environment. The environment consists of three memory circuits (FLASH, SRAM, EEPROM), 20 bit address bus and 8 bit data bus.EEPROM uses serial communication.

MCU functions:

– system control

– communication control

– user interface

– authentication

– RF monitoring

– power up/down control

– accessory monitoring

– battery monitoring

– self–test and production testing

– charging control

Input Signals of CTRLU

Signal name	Signal description	From
VL1	Power supply voltage for CTRLU block	PWRU
VREF	Reference voltage for MCU A/D converter	PWRU
VBATDET	Battery voltage detection	PWRU
VC	Charger voltage monitoring	PWRU
ROMSELX	Chip select for the FLASH memory	ASIC
RAMSELX	Chip select for the SRAM memory	ASIC
RESETX	Reset signal for MCU	ASIC
NMI	Non–maskable interrupt request	ASIC
MCUCLK	Main clock for MCU	ASIC
IRQX	Interrupt request	ASIC
MBUSOUT	Transmitted M2BUS–data from M2BUS–circuitry of ASIC	ASIC
PCMCDO	Audio codec control data receiving	AUDIO
RSSI	Received signal level indicator	RF
TRF	RF module temperature detection	RF

Copyright © Nokia Mobile Phones

TXF	Transmitter on/off error control	RF
VF	Programming voltage for flash memory	System conn.
JCONN	Indicates if phone is connected to car installation bracket. When phone is connected to car installation bracket, this signal has about 2 V d.c. level, otherwise d.c. level is 0 V.	System conn.
RXD2_HOOK	The use of handsfree monitoring Flash programming data input on the production line	System conn.
BTEMP	Battery temperature detection Vibrator battery control signal	Battery conn.
BSI	Battery size identification	Battery conn.

Outputs Signals of CTRLU

Signal name	Signal description	To
XPWROFF	Power off control, PSL+ watchdog reset	PWRU
PWM	Charger on/off control	PWRU
MCUASX	MCU address strobe	ASIC
WSTROBEX	MCU write strobe	ASIC
RSTROBEX	MCU read strobe	ASIC
MCUAD(19;0)	20–bit MCU address bus	ASIC
MBUSDET	MBUS activity detection	ASIC
TXD	Transmitted M2BUS–data to M2BUS–circuitry of ASIC.	ASIC
PCMCLK	Clock for audio codec control data transfer	AUDIO
PCMCDI	Audio codec control data transmitting	AUDIO
XSELPCMC	Chip select for audio codec	AUDIO
TXD2_PHFS	Power on/off control for HF device Verification output of the programmed data of flash on the production line	System conn.
UIF8	Call–led control	Uif conn.
BUZZER	Buzzer signal to earphone	Uif conn.

Copyright © Nokia Mobile Phones

Bidirectional Signal of CTRLU

Signal name	Signal description	To/From
MCUDA(7;0)	MCU's 8 bit data bus	ASIC,memories
M2BUS	Asyncronous serial data bus	System conn.

Block Description of CTRLU

MCU – Memories

MCU has a 20 bits wide address bus A(19:0) and an 8–bit data bus with memories. The address bits A(19:16) are used for chip select decoding. The decoding is done in UDSA2–asic.

On the Hitachi HD647534 internal memory map there is the following:

00000 – 07FFF	32k bytes internal ROM
0F680 – 0FE7F	2k bytes internal RAM
0FE80 – 0FFFF	384 bytes registers

External memory map is the following:

08000 – 0FFFF	32k bytes RAM
30000 – 300FF	256 bytes ASIC
80000 – BFFFF	256k bytes FlashROM

CTRLU – PWRU

MCU controls the watchdog timer in PSL+. It sends a positive pulse at approximately 2 Hz to XPWROFF pin of the PSL+ to keep the power on. If MCU fails to deliver this pulse, the PSL+ will remove power from the system. MCU controls also the charger on/off switching in the PWRU block. When power off is requested MCU leaves PSL+ watchdog without reset. After the watchdog has elapsed PSL+ cuts off the supply voltages from the phone.

CTRLU – ASIC

MCU and ASIC have a common 8 bit data bus and a 9 bit address bus. A(5:0) are used for normal addressing whereas bits A(19:16) are decoded in ASIC to chip select inputs for CTRLU memories. ASIC controls the main clock, main reset and interrupts to MCU. The internal clock of MCU is half the MCUCLK clock speed. RESETX resets everything in MCU except the contents of the RAM. IRQX is general purpose interrupt request line from ASIC. After IRQX request the interrupt register of asic is read to find out the reason for interrupt. NMI–interrupt is used only to wake up MCU from software standby mode.

CTRLU – DSPU

MCU and DSP communicate through ASIC. ASIC has MCU mailbox and DSP–mailbox. MCU writes data to MCU mailbox where DSP can only read the incoming data. In DSP–mailbox data transfer direction is opposite.

Copyright © Nokia Mobile Phones

CTRLU – AUDIO

When the the chip select signal XSELPCMC goes low, MCU writes or reads control data from AUDIO at the rate defined PCMCLK. PCMCDI is output data line from MCU to codec and PCMCDO is input data line from codec to MCU.

CTRLU – BATTERY – Monitoring

MCU monitors battery functions with 3 channels (BTEMP, BSI,VBATDET) of an 8 channel A/D converter.

CTRLU – RF – Monitoring

MCU monitors RF functions with two channels (RSSI and TRF) of an 8 channel AD converter and one digital I/O–pin (TXI).

CTRLU – Keyboard and LCD Driver Interface

MCU and User Interface communication is controlled through ASIC.

CTRLU – ACCESSORIES

M2BUS is used to control external accessories. This interface can be used also to factory testing and service and maintenance purposes.

Behaviour in Different Modes

Analog Control Channel Modes

While on analog control channel the MCU and the peripherals are in standby. From time to time the MCU must poll the states of the control lines from the accessories.

The UDSA2 gives an interrupt to MCU if RX–modem detects data on channel. The MCU then wakes up and starts controlling the receiving. If the data was not for that phone the MCU will go to standby. Otherwise it will continue to control the phone and start establishing the call.

Another alternative to wake up the processor is that the user pushes any button on the keyboard. After that the asic will give an interrupt and the MCU starts to control the phone.

Out–of–Range Mode

In out–of–range mode the MCU is in standby most of the time. During that time the input clock is also stopped to save power. ASIC wakes up the MCU from time to time to control the search for control channels and to reset the PSL+ watchdog. MCU use OOR signal to cut off the voltages from receiver to save power in out of range mode.

Analog Voice Channel Mode

During analog voice channel operation the MCU is in charge of the operation of the phone. The MCU is sleeping always when it is possible.

Copyright © Nokia Mobile Phones

Digital Traffic Channel Mode

During digital traffic channel operation the MCU is in charge of the operation of the phone. The MCU is sleeping always when it is possible.

Digital Control Channel Mode

While on analog control channel MCU and the peripherals are in standby. From time to time the MCU must poll the states of the control lines from the accessories.

DSPU perioidically wakes up to receive the paging information from PCH or BCCH. DSPU wakes up the MCU if message is for the phone. MCU processes the messages and controls the phone accordingly. If message was not for the phone, then DSPU goes back to standby.

Another alternative to wake up the processor is that the user pushes any button on the keyboard. After that the asic will give an interrupt and the MCU starts to control the phone.

Main Components

- Hitachi H8/534
  - H8/534 is a CMOS microcomputer unit (MCU) comprising a CPU core and on–chip supporting modules with 16 bit architecture. The data bus to outside world has 8 bits.
- 512k*8 bit FLASH memory
  - 150 ns maximum read access time
  - contains the main program code for the MCU; in the beginning the DSP program code locates also in FLASH
- 32k*8bit SRAM memory
  - 100 ns maximum read access time
- 8k*8bit EEPROM memory
  - serial communication
  - contains user defined information

Copyright © Nokia Mobile Phones

PWRU

The power block makes the supply voltages for the baseband and includes also the charging electronics.

Input Signals of PWRU

Signal name	Signal description	From
XPWRON	PWR on switch	UIF
XPWROFF	Power off control	CTRLU
VBATT	Battery voltage	System conn.
PWM	Charger on/off control	CTRLU
VCHAR	Charging voltage	System conn.

Output Signals of PWRU

Signal name	Signal description	To
XRES	Master reset	ASIC
VL1	Logic supply voltage 1. Max 150 mA.	CTRLU,ASIC, RFI,UIF
VL2	Logic supply voltage 2. Max 150 mA.	DSPU
VA1	Analog supply voltage 1. Max 40 mA.	RFI
VA2	Analog supply voltage 2. Max 80 mA.	AUDIO,UIF
VREF	Reference voltage 4.65V ±2%. Max. 5mA.	CTRLU,ASIC, RF
VBATDET	Switched VBATT divided by 2	CTRLU
VC	Attenuated VCHAR	CTRLU

Block Description of PWRU

PSL+ has an internal watchdog, voltage detection and charger detection functions. The watchdog will cut the output voltages if it is not resetted once in about 0.5 seconds. The voltage detector resets the phone if the battery voltage falls below 4.5 V.

The charging electronics is controlled by the MCU. When the charging voltage is applied to the phone while the phone is powered up, the MCU detects it and starts controlling the charging.

If the phone is in power–off, the PSL+ will detect the charging voltage and start the phone. If the battery voltage is high enough the reset will be released and the MCU will start controlling the charging. If the battery voltage is too low the phone is in reset and charging control circuitry will pass the charging current to

Copyright © Nokia Mobile Phones

the battery. When the battery voltage has reached 4.5 V the reset will be removed and the MCU starts controlling the charging. This all is invisible to the user.

Main Components of PWRU

- PSL+ asic
  - Makes the voltages, has power switch, charger and battery detection and watchdog.
- Transistor BCP69–25 and Schottky STPS340U
  - The charging current is passed through these components.
- Transistor BCX51
  - VL regulators of PSL+ external output transistors.

Copyright © Nokia Mobile Phones

DSPU

The DSPU (Digital Signal Processing Unit) block is in charge of the channel and speech coding according to the IS–54B (2120 Plus) and IS–136 (2160) specs. The block consists of a TMS320C541 DSP and slow external RAMs. The DSP chip contains 28k word internal mask ROM and 4k word internal RAM

The main functions by two main modes of the DSPU block are as follows:

- control and general functions:
  - main control of the DSP
  - communication with MCU and data adapter module
  - RF control
- analog mode speech processing functions:
  - pre–emphasis, de–emphasis
  - expansion, compression
  - analog audio signal filtering
  - acoustic echo cancellation (only when the handset is used)
- digital mode speech processing functions:
  - VAD (Voice Activity Detection)
  - full rateVSELP (Vector Sum Exited Linear Prediction) speech coding
  - acoustic echo cancellation (only when the standard HF is used)
- analog mode modem functions:
  - ST (Signalling Tone) signal generation
  - SAT (Supervisory Audio Tone) signal detection and regeneration
  - WBD (Wide Band Data) sending
- digital mode modem functions:
  - raised cosine filtering
  - channel equalization
  - interleaving
  - convolutional coding and decoding
  - MAHO (Mobile Assisted HandOff) measurements
  - AFC (Automatic Frequency Control)
  - symbol and frame synchronization
  - AGC (Automatic Gain Control)
  - DTX (Discontinuous Transmission) control
  - CRC generation and checking

Copyright © Nokia Mobile Phones

Input Signal of DSPU

Signal name	Signal description	From
VL2	Logic supply voltage 2. Max 150 mA.	PWRU
DSPCLK	Master clock for DSP	ASIC
DSPRSTX	Reset for the DSP	ASIC
PCMDATRCLK, PCMDATRCLKX	Differential PCM–data receive clock	ASIC
PCMOUT	Received audio in PCM–format	AUDIO
INT0, INT1	Interrupts for DSP	ASIC
PCMCO–SYCLKX	PCM–data bit sync clock	ASIC

Output signal of DSPU

Signal name	Signal description	To
PCMIN	Transmitted audio in PCM–format	AUDIO
IOX	I/O enable. Indicates access to DSP address space.	ASIC
RWX	Read/WriteX	ASIC
DSPAD(17;0)	Address bus and control signals	ASIC

Bidirectional signal of DSPU

Signal name	Signal description	To/From
DSPDA(15;0)	16–bit data bus	ASIC

Block Description of DSPU

DSP communicates with MCU trough a mailbox in the UDSA2 ASIC. DSP communicate with the PCM codec with the SIO1 serial bus. DSP controls RFI and RF through UDSA2.

Analog transmit

Audio signal in analog mode is fed to the PCM codec, where it is routed, amplified and converted by internal A/D converter into 64 kb/s bitstream. The digitized speech is processed by the DSP audio modules into 48.6 k samples/s audio. The samples are sent to the RFI's AGC D/A converters. AGC DAC –output signal is fed to VHF syntheziser to give FM modulation. DSP must also perform echo cancelling in HF mode.

Copyright © Nokia Mobile Phones

Analog receive

In analog receive the demodulated analog signal is first A/D converted in RFI at 48.6 k samples/s. The samples are directed trough UDSA2 to DSP. DSP performs audio processing and finally transfers the digital audio at 64 kb/s to the PCM codec, where they are D/A converted. Resulting audio signal is routed and amplified to the earpiece or external loudspeaker.

Digital transmit

In digital transmit mode DSP processes speech data in 20 ms slots. It performs VSELP speech coding, CRC generation, convolutional coding and interleaving. Finally it sends the symbols to the UDSA2 modulator. The UDSA2 modulator performs the $\pi/4$ DQPSK modulation. UDSA2 controls the transmit timing and at specified intervals sends the I/Q samples at 97.2 k samples/s to RFI for TXI/Q D/A converters.

Digital receive

In digital receive mode the 2.43 MHz IF signal from RF unit is converted with RFI/Q A/D converters at sample rate of 48.6 k samples/s. The timing is controlled by UDSA2. DSP performs bit detection with equalizer and then convolutional decoding and CRC checking. After this the (speech) bits are passed for VSELP speech decoding. The decoded bits are converted to analog signal in the PCM codec, routed and fed to the earpiece.

Analog modem functions

Analog modem decoding functions: ST and SAT. but not Wide Band Data (WBD) are performed by the DSP. All modem transmit functions are performed by DSP. WBD is received through an external BP filter and decoded (Manchester decoding, 3/5 vote and BCH decoding) by the UDSA2 modem. In XSTBY mode, the 3/5 voting is not used.

Control functions

In all modes except analog control channel mode DSP controls the RF. Controlling is done physically through UDSA2, where all necessary timing functions are implemented, and control I/O lines are provided for e.g. syntheziser loading, power control etc.

All clocks and timing are generated from the RFC clock, which is amplified in the ASIC block.

Copyright © Nokia Mobile Phones

Modes of Operation

DSP goes to sleep by first executing clock stop command to UDSA2 and then executing IDLE2 instruction. When DSP is in standby, the clock is disabled and PLL also stopped. DSP is woken up from the sleep by UDSA2 by first starting the clock and then after a delay issuing an interrupt0/1. No reset is needed.

Analog Control Channel (ACC)

DSP is used to CRC–status checking

Out of Range Mode (OOR)

DSP is used for searching for digital control channels in digital mode. MCU searches for analog control channels.Synthezisers are controlled by DSP.

Analog Voice Channel Mode (AVCH)

On analog voice channel DSP performs the audio processing, FM modulation, and signalling except WBD reception. In the HF mode it also performs echo-cancellation and the HF algorithm.

Digital Traffic Channel Mode (DTCH)

DSP processes the speech signal in 20 ms slots. RX, TX and MAHO are timed by the UDSA2 timers. DSP sleeps whenever possible.

Main Components of DSPU

- TI TMS320C541 DSP
  - 38.88 MIPS
  - 4k RAM/ 28k ROM
  - 2 SIOs, 1 timer
  - programmable PLL for clocking (4X used: 4*9.72MHz = 38.88MHz)
  - 2*32 kb 70 ns external RAM

Copyright © Nokia Mobile Phones

AUDIO

The block consists of audio codec with some peripheral components. The codec includes microphone and earpiece amplifier and all the necessary switches for routing. The controlling of the codec is done by the MCU. The PCM data comes from and goes to DSPs.

Input signal of AUDIO

Signal name	Signal description	From
VA2	Analog supply voltage 1. Max 80 mA.	PWRU
PCMIN	Received audio in PCM–format	DSPU
SYNC	8kHz/8.1kHz frame sync (=PCMCOSYCLK)	ASIC
CODEC_CLK	512kHz/518.4kHz codec main clock (=PCMDATRCLK)	ASIC
PCMCDI	Audio codec control data	CTRLU
PCMCLK	Clock for audio codec control data transfer	CTRLU
XSELPCMC	Audio codec chip select	CTRLU
XMIC–JCONN	External microphone	System conn.
MICN,MICP	Differential microphone signal	UIF conn.

Output signal of AUDIO

Signal name	Signal description	To
PCMOUT	Transmitted audio in PCM–format	DSPU
PCMCDO	Audio codec control data	CTRLU
MIC_EN	Microphone enable	UIF
XEAR_HFJPWR	External received audio	System conn.
JCONN	XMIC_JCONN connection signal level indicator	ASIC
EARN,EARP	Internal received audio	UIF
BUZZ	Vibrator control signal	Vibrators

Copyright © Nokia Mobile Phones

Block Description of AUDIO

The audio codec communicates with the DSP through a SIO (signals: PCMIN, SYNC, CODEC_CLK and PCMOUT) . MCU controls the audio codec functionality through a separate SIO (signals: PCMCDO, PCMCDI, PCMCLK and XSELPCMC).

Analog control channel

The codec is in standby except when keybeeps are needed. LO output is floating in standby and it disables the microphone bias circuit on flex.

Analog out of range mode

The codec is in standby and microphone bias current is removed.

Analog voice channel mode

The PCM–data is connected to the DSP.

Digital mode

The PCM–data is connected to the DSP.

Main Componets of AUDIO

- Audio codec ST5090
  - Includes e.g. PCM codec, audio routing switches, microphone and earpiece amplifiers for 2 connections (internal and external devices) and DTMF generator. Buzzer control is used for vibrator control.

Copyright © Nokia Mobile Phones

ASIC

This block mainly consists of DAMPS specific asic (UDSA2). It also includes RX modem filter and RFC clock buffer. The ASIC takes care of the following functions:

- interface between MCU and UIF
- interface between DSP and MCU
- interface between MCU, DSP and RFI
- clock generation and disable/enable
- RX signalling message receiving for analog control and voice channels
- RF–controls
- UIF–interface
- Timers
- M2BUS interface

Input Signals of ASIC

Signal name	Signal description	From
VL1	Logic supply voltage 1. Max 150 mA	PWRU
VREF	Reference voltage	PWRU
ADATA/92	Receiver IF/analog received signal to analog modem	RF
IOX/129	I/O enable, indicates access to DSP address space	DSPU
RWX/130	Read/writeX	DSPU
WSTROBEX/55	MCU’s write strobe	CTRLU
RSTROBEX/56	MCU’s read strobe	CTRLU
RFC/2	Ref. clock from VCTCXO (19.44 MHz)	RF
PORX/88	Master reset	PWRU
DSPAD(17:0)	Address bus and control signals	DSPU
MCUAD(19:0)	MCU’s 20 bit address bus	CTRLU
TXD/79	Transmitted M2BUS data to M2BUS circuitry of ASIC	CTRLU
MCUASX/74	MCU’s address strobe	CTRLU
DAX/15	Data acknowledge	RFI
MBUSDET/58	MBUS activity detection	CTRLU

Copyright © Nokia Mobile Phones

Output signals of ASIC

Signal name	Signal description	From
INT0X/117 INT1X/116	Interrupts for DSP	DSPU
NMI/68	Not maskable interrupt request	CTRLU
IRQX/69	Interrupt request	CTRLU
SYSRESETX/14	Master (power up) reset	CTRLU
DSPRSTX/121	Reset for the DSP	DSPU
WRX/16	Write strobe	RFI
RDX/17	Read strobe	RFI
RFIAD(3:0)	RFI address bus	RFI
SCLK/5	Synte load clock	RF
SDATA/6	Synte load data	RF
SENA1/7	Receiver synte enable	RF
SENA2/4	Fast synte enable	RF
TXPWR/9	TX circuitry power enable	RF
SYNTHPWR2/10	Synte circuitry power enable	RF
TXP/11	Transmit enable	RF
TXLX/8	TX power level	RF
TXA/12	RF power control loop adjustment	RF
RXPWR/119	Receiver power control	RF
BOOTSELX/137	RX_UHF_LO buffer current control (used to TXPWR2 purpose)	RF
BENA/89	Booster enable	System conn.
MCUCLK/70	Main clock for MCU	CTRLU
RFICLK/35	RFI master clock	RFI
RFI2CLK/34	RFI sleep clock	RFI
PCMDATRCLK/94	Differential PCM data receive clock	DSPU, AUDIO
PCMDATRCLKX/115	Differential PCM data receive clock, inver.	DSPU
PCMCOSYCLK/95	Differential bit sync clock	AUDIO
PCMCOSYCLKX /118	Differential bit sync clock, inverted	DSPU
MBUSOUT/91	MBUS output from MBUS logic	CTRLU
ROMSELX/81	Chip select for the FLASH memory	CTRLU

Copyright © Nokia Mobile Phones

EROMSELX/80	Chip select for the EEPROM memory (nc)	CTRLU
RAMSELX/82	Chip select for the SRAM memory	CTRLU
COL(3:0)/107–104	Lines for keyboard column write	UIF
KEYLIGHT/113	Keyboard backlight on/off control	UIF
UIF7/114	LCD display backlight on/off control	UIF
REF_CONTROL	RFI reference voltage control	RFI
RXTX10/140	RFI reset control	RFI

Bidirectional signals of ASIC

Signal name	Signal description	From
DSPDA(15:0)/54–39	16 bit data bus	DSPU
MCUDA(7:0)/60–67	MCU's 8 bit data bus	CTRLU
RFIDA(11:0)/22–33	12 bit data bus	RFI
UIF(6:0)/97–103	LCD controller control and keyboard read bus	UIF

Block Description of ASIC

RFC buffer buffers the 19.44MHz clock from VCTCXO to ASIC. In ASIC that clock is further buffered and divided for MCU, RFI, DSP (9.72MHz) and audio codec (main and sync clocks). The clock outputs can be disabled in order to save current when the clock is not needed.

The filtering of DAF signal from RF receiver is done using a second order BP filter. After filtering it is squared to logic levels for ASIC.

Main Components of ASIC

- UDSA2 asic
- passive filtering and opamp for DAF squaring

Copyright © Nokia Mobile Phones

RFI

The block consists of RFI–ASIC and its reference voltage generator. This block is an interface between RF and baseband. The block has the following functions:

- IF receiving and A/D conversion
- I/Q separation
- I and Q transmit and D/A conversion
- AFC D/A
- TXC, also used as an analog AGC
- AGC DAC, is used to provide FM modulation
- Analog signal for analog transmit an receive, power level and mixer bias

The RFI is connected to DSA with a 12 bit databus. The registers in RFI are accessed using 4 address bits.

Inputs signals of RFI

Signal name	Signal description	From
VL/48,52,60	Logic supply voltage 1. Max 150 mA.	PWRU
VA2/2,5,10,13	Analog supply voltage 2. Max 80 mA.	PWRU
VREF	Referens voltage from PSL+ (4.65V)	PWRU
RFIRESETX/18	RFI reset	ASIC
RFIAD(3;0)/31–34	RFI address bus	ASIC
RDX/49	Read strobe	ASIC
WRX/50	Write strobe	ASIC
RFICLK/53	RFI master clock	ASIC
RFI2CLK/59	RFI sleep clock	ASIC
RXQ,RXI/1,63	Receiver IF/analog received signal	RF
AFC_CONTROL	AFC line float/middle of the range control	MCU
REF_CONTROL	Reference voltage/VB_ext on/off control	ASIC

Copyright © Nokia Mobile Phones

Output signals of RFI

Signal name	Signal description	To
DAX/51	Data acknowledge	ASIC
AFC/14	Automatic frequency control voltage	RF
PDATA0/29	AGC control	RF
AMOD/16	analog baseband transmit signal	RF
TXC/6	TX transmit power control voltage	RF
TXQP/8,TXQN/9	differential TX quadrature signal	RF
TXIP/11,TXIN/12	differential TX inphase signal	RF
MODE/19	Analog/digital mode control	RF

Bidirectional of RFI

Signal name	Signal description	To/From
RFIDA(11;0)/35–40, 42–47	12 bit data bus	ASIC

Main Components of RFI

- RFI asic
- 4.096 V external voltage reference LM4040 for RFI

Copyright © Nokia Mobile Phones

RF Module Block

RF block is designed for a hand portable phone, which operates in AMPS and DMR systems. Purpose of the RF module is to receive and demodulate radio frequency signal from the base station and to transmit a modulated RF signal to the base station. RF parts are designed for power class IV. Power class can be increased to class I with external booster amplifier.

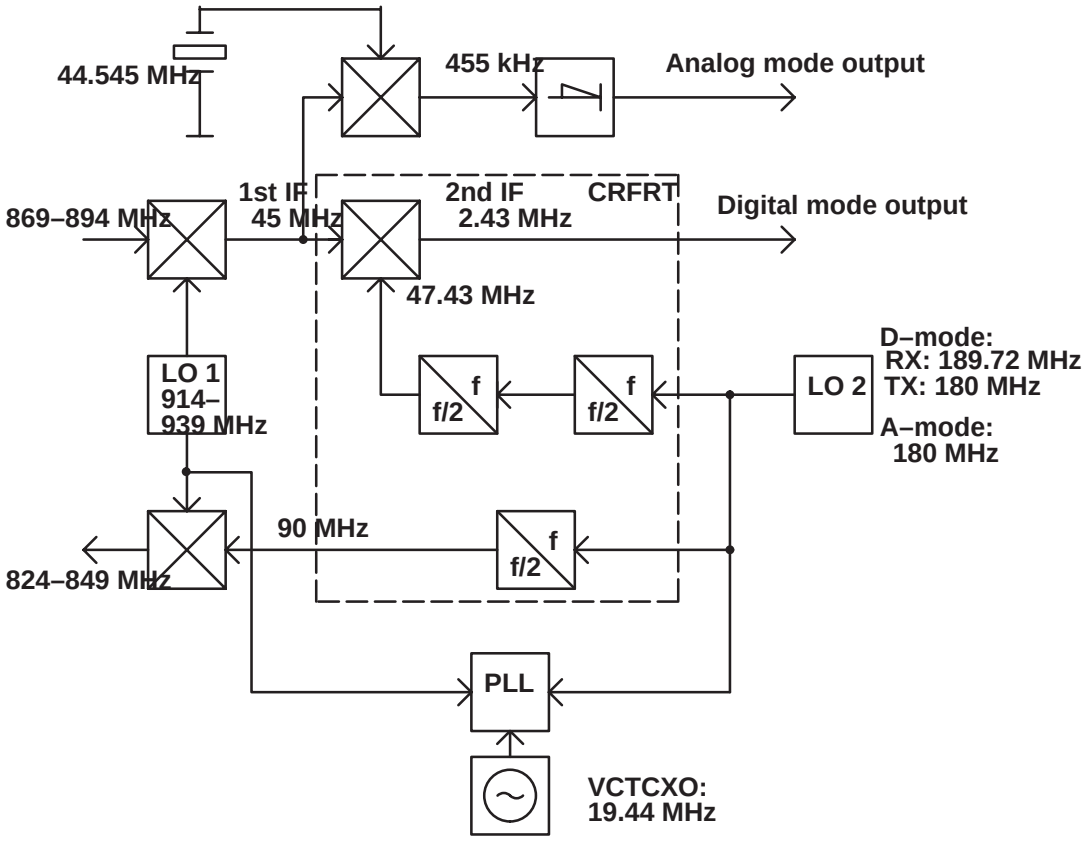
List of Functional Blocks

- RX, Receiver
- TX, Transmitter and modulator
- SYNT, UHF and VHF synthesizers

Constructions and Connections

All functional blocks of the RF are mounted on single multilayer printed circuit board. This board contains also MCU and DSP functions. Chassis of the radio unit contains separating walls for RF subblocks and DSP. All components of the RF are SMD type, which are soldered using reflow solder. Signals to booster amplifier are fed via bottom connector of the radio unit.

RF Frequency Plan



Copyright © Nokia Mobile Phones

Functional Description

Receiver

The receiver is a double conversion receiver.

The received RF signal from the antenna is fed via a duplex filter to the receiver unit. The signal is amplified by a discrete low noise preamplifier. In digital mode the gain of the amplifier is controlled by the AGC control line (PDATA0). The nominal gain of 10 – 15 dB is reduced in the strong field condition about 25 – 30 dB. After the preamplifier the signal is filtered by SAW RF filter. The filter rejects spurious signals coming from the antenna and spurious emissions coming from the receiver unit.

The filtered RF– signal is down converted by a passive diode mixer. The frequency of the first IF is 45 MHz. The first local signal is generated by the UHF synthesizer. The IF signal is amplified and then it is filtered by crystal filter. The filter rejects adjacent channel signal, intermodulating signals and the second IF image signal. The filtered 1st IF is amplified and fed to the receiver part of the integrated RF circuit CRFRT in digital mode and to FM IF IC in analog mode.

In CRFRT the IF signal is amplified by an AGC amplifier which has gain control range of 57 dB. The gain is controlled by an analog signal via TXC–line.
The amplified IF signal is down converted to the second IF in the mixer of CRFRT. The second local signal is generated from VHF VCO by dividing the original signal by 4 in the dividers of CRFRT.

The second IF frequency is 2.43 MHz. The second IF is filtered by a ceramic resonator filter.The filter rejects signals of the adjacent channels. The filtered second IF is fed back to CRFRT where it is amplified and fed out to RFI via RXI and RXQ lines.

In analog mode the filtered and amplified first IF signal is fed to the FM IF IC circuit. In this IC the signal is down converted to the second IF 455 kHz. Limitting amplifiers and detector operate on this frequency. Demodulated signal is fed to RFI via RXI–line. Demodulated wideband data is fed to system asic. FM IC produces also RSSI voltage which is propotional to the received RF signal strenght. Injection for 2nd mixer is generated in crystal oscillator circuit (44.545 MHz).

Frequency Synthesizers

The stable frequency source for the synthesizers and base band circuits is voltage controlled, temperature compensated crystal oscillator, VCTCXO module. The frequency of the oscillator is 19.44 MHz. It is controlled by an AFC voltage, which is generated by the base band circuits. In digital mode receiver is locked to base station frequency by AFC. In analog mode AFC voltage is fixed (there is no automatic frequency control).

Copyright © Nokia Mobile Phones

The UHF synthesizer generates the down conversion signal for the receiver and the up conversion signal for the transmitter. UHF frequency is 914.04 ... 938.97 MHz, depending on the channel which is used.The UHF VCO is a module. The PLL circuit is dual PLL, common for both UHF and VHF synthesizers.

The VHF synthesizer signal (divided by 4 in CRFRT) is used in digital RX mode as a local for the second mixer. Also the VHF signal (divided by 2 in CRFRT) is used in the I/Q modulator of the transmitter.

In analog mode VHF synthesizer signal is only used for transmitter. Analog modulation is generated in VHF synthesizer.

In digital mode VHF synthesizer frequency is 180.0 MHz during transmitting and 189.72 MHz during receiving. In analog mode VHF frequency is 180.0 MHz.

Transmitter

The TX intermediate frequency is modulated in digital mode by an I/Q modulator contained on transmitter section of CRFRT IC. The TX I and Q signals are generated in the RFI interface circuit and they are fed differentially to the modulator. In analog mode modulation is fed to VHF synthesizer from AGC DAC in RFI circuit.

Modulated intermediate signal is amplified or attenuated in temperature compensated controlled gain amplifier (TCGA). The output of the TCGA is amplified and the output level of CRFRT is typically –10dBm.

The output signal from CRFRT is low–pass filtered to reduce harmonics and noise. The final TX signal is achieved by mixing the UHF VCO signal and the modulated TX intermediate signal with passive mixer. After mixing the TX signal is amplified and filtered by two amplifiers and two filters. The filters are microstripe filter and SAW–filter. After these stages the level of the signal is typically 1 mW (at highest power level).

The discrete power amplifier amplifies the TX signal to the desired power level. Amplified TX signal is filtered in duplex filter. Then signal is fed via semirigid cable to the antenna switch in the bottom connector. From the antenna switch signal is fed to external antenna connector or via semirigid cable to the antenna. The maximum output level is typically 480 mW.

The power control loop controls the output level of the power amplifier. The power detector consists of a directional coupler and a diode rectifier. Transmitted power is controlled with controlled gain amplifier (TCGA) on TX–path of CRFRT. Power is controlled with TXC and TXP signals. The power control signal (TXC), comes from the RF interface circuit, RFI.

Copyright © Nokia Mobile Phones

Modes of Operation

Analog control channel mode

Radio unit ready for analog reception. UHF–synthesizer and RX analog parts running, otherwise RF circuits powered down.

Analog out of range mode and extended stby mode

All RF circuits powered down except the reference frequency oscillator.

Analog voice channel mode

Analog receiver section running, UHF–synthesizer, VHF–synthesizer, modulator and transmitter power amplifier are activated. Digital part of the receiver powered down.

Digital traffic channel mode

Digital receiver, UHF and VHF synthesizers, modulator and TX power amplifier running, pulsed operation. Analog FM IF–circuit powered down.

Software Compensations

Power Levels (TXC) vs. Temperature

Because of wide temperature range and poor cooling of the RF block, it is necessary to compensate the effect of temperature on output power. To monitor this environment change, temperature measurement is used. There is a table of factor, which are used for temperature compensation, common values for all power levels and both modes. The values for these are defined without factory measurements. Temperature is measured and right compensation value is add-ad to TXC–value. Requirement for compensation update is for every 1 minutes or after every 5 degrees C of temperature change. This means, that during analog mode transmission there will be need for temperature reading and TXC compensation update. Because of poor cooling of RF block and insufficient linearity in high temperatures, output power is reduced from level 2 to level 2.5 when temperature inside the phone is above +80 C in analog mode and above +65 C in digital mode.

Power Levels (TXC) vs. channel

Duplexer frequency response ripple is compensated by software. Power levels are calibrated on four channels in production. Values for channels between these tuned channels are calculated using linear interpolation.

Copyright © Nokia Mobile Phones

Power Levels vs. Battery Voltage

For saving battery capacity and because of insufficient linearity in digital mode, output power is decreased from level 2 to level 2.5, when battery voltage drops below 5.6V.

Power Up/Down ramps

Transmitter output power up/down ramps are controlled by sw. A special ramp tables are used for that. Requirement is for six different ramps. Separate ramps are used in power up and power down ramps.

Digital Mode RSSI

Digital mode RSSI vs. input signal is calibrated in production, but RSSI vs. temperature and RSSI vs. channel are compensated by software.

RF Characteristics

Receiver

Duplex Filter

The duplex filter consists of two functional parts; RX and TX filters. The TX filter rejects the noise power at the RX frequency band and TX harmonic signals. The RX filter rejects blocking and spurious signals coming from the antenna.

Pre–amplifier

The bipolar pre–amplifier amplifies the received signal coming from the antenna. In digital mode, in the strong field conditions the gain of the amplifier is reduced 28 dB, typically.

RX Interstage Filter

The RX interstage filter is SAW filter. The filter rejects spurious and blocking signals coming from the antenna. It also rejects the local oscillator signal leakage to the antenna.

First mixer

The first mixer is a single balanced passive diode mixer. The local signal is balanced by a printed circuit transformer. The mixer down converts the received RF signal to IF signal.

First IF amplifier

The first IF amplifier is a bipolar transistor amplifier.

Copyright © Nokia Mobile Phones

First IF filter

The first IF filter is a four pole crystal filter. The IF filter is for channal selectivity.

2nd first IF amplifier

The 2nd first IF amplifier is used to guarantee proper impedance matching to the first IF filter output in both operating modes.

Receiver IF circuit, RX part of CRFRT (digital mode)

The receiver part of CRFRT consists of an AGC amplifier of 57 dB gain, a mixer and a buffer amplifier for the last IF. The mixer of the circuit down converts the received signal to the last IF frequency. After external filtering the signal is amplified and fed to baseband circuitry.

Second IF filter

The second IF filter is a ceramic filter, which makes part of the channel selectivity of the receiver. In digital mode second IF filter it is made using ceramic resonators.

FM IF circuit (analog mode)

The FM IF circuit is used in anlog mode. The IC is Toshiba TA31136FN including 2nd mixer, local oscillator, limiting if stages, quadrature detector and RSSI function.

Transmitter

Modulator Circuit, TX part of CRFRT

The modulator is a quadrature modulator contained in Tx–section of CRFRT IC. The I– and Q– inputs generated by RFI interface are DC–coupled and fed via buffers to the modulator. The local signal is divided by two to get accurate 90 degrees phase shifted signals to the I/Q mixers. After mixing the signals are combined and amplified with temperature compensated controlled gain amplifier (TCGA). Gain is controlled with power control signal (TXC). The output of the TCGA is amplified and the maximum output level is –10 dBm, typically.

Unconversion mixer

The upconversion mixer is a single balanced passive diode mixer. The local signal is balanced by a printed circuit transformer. The mixer upconverts the modulated IF signal coming from quadrature modulator to RF signal.

Copyright © Nokia Mobile Phones

TX buffers

The TX buffers are a bipolar transistor amplifier. They amplifies the TX signal coming from the upconversion mixer.

TX interstage filter

The TX filter rejects the spurious signals generated in the upconversion mixer. It rejects also the local, image and IF signal leakage and RX band noise.

Power amplifier

The power amplifier is a two stage discrete amplifier using GaAs FETs CLY5 and CLY10. It amplifies the 0 dBm TX signal to the desired output level. It ihas been specified for 6 volts operation. Power transistor bias is tuned in production using the DAC in PLL circuit UMA1018.

Power control circuitry

The power control loop consists of a power detector and a differential control circuit. The power detector is a combination of a directional coupler and a diode rectifier. The differential control circuit compares the detected voltage and the control voltage (TXC) and controls voltage controlled amplifier (in CRFRT). The control circuit is a part of CRFRT.

Synthesizers

Reference oscillator

The VCTCXO signal is used for a reference frequency of the synthesizers and the clock frequency for the base band circuits.

YHF synthesizer

The VHF synthesizer consists of the VHF VCO, PLL integrated circuit and loop filter. The output signal is used for the 2nd mixer of the receiver in digital mode and for the I/Q modulator of the transmitter. In digital mode the VCO changes the frequency according to the RX/TX slot. In analog mode FM modulation is done in VHF synthesizer. Bilateral switch is used to change operation mode; slow analog mode or fast digital mode.

The VHF VCO uses a bipolar transistor as a active element and a combination of a chip coil and varactor diode as a resonance circuit. The buffer is combined into the VCO circuit so, that they use same collector current.

Copyright © Nokia Mobile Phones

UHF synthesizer

The UHF synthesizer consists of a UHF VCO, power divider, PLL circuit and a loop filter. The output signal is used for the 1st mixer of the receiver and the upconversion mixer of the transmitter.

UHF buffers

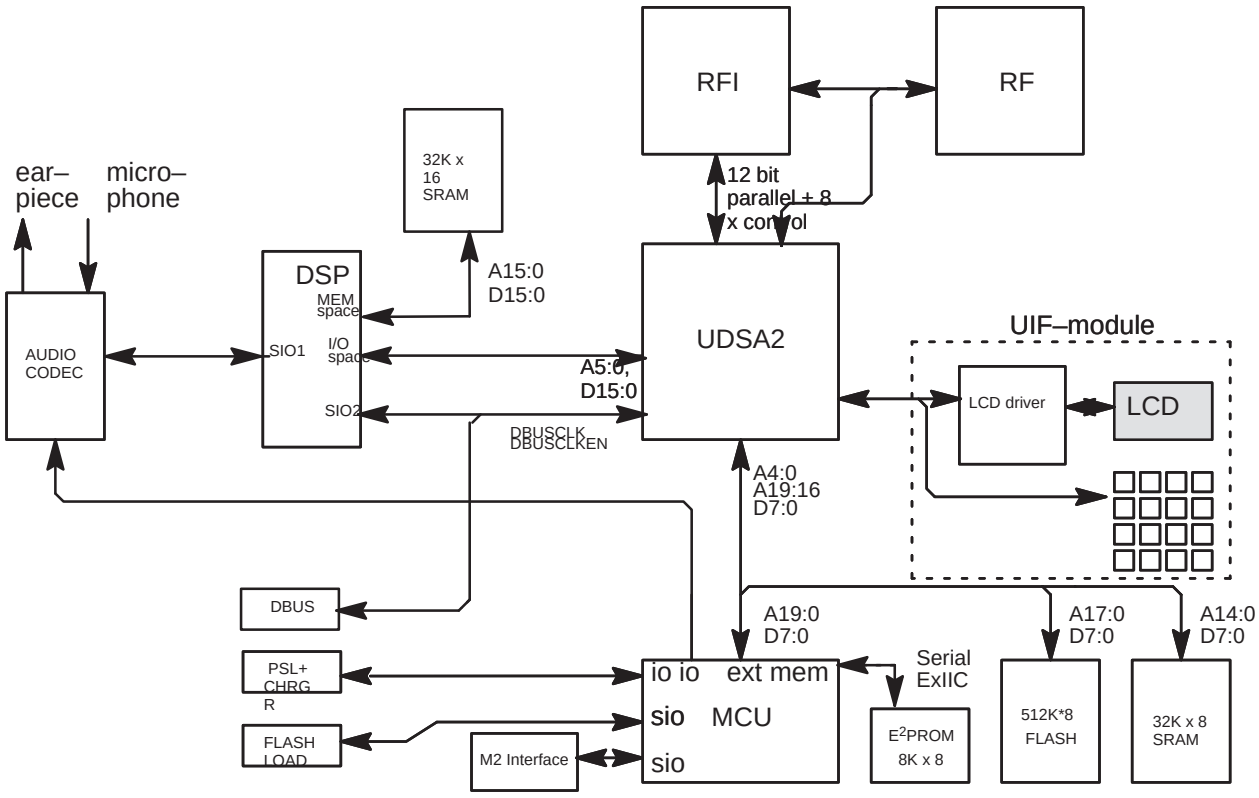
The buffers amplifies the UHF VCO signal. The output signal of UHF VCO is divided into the 1st mixer of the receiver and the upconversion mixer of the transmitter. There is one buffer for TX and one for RX.

PLL circuit

The PLL circuit is PHILIPS UMA1018. The circuit is a dual frequency synthesizer including both the UHF and VHF synthesizers.

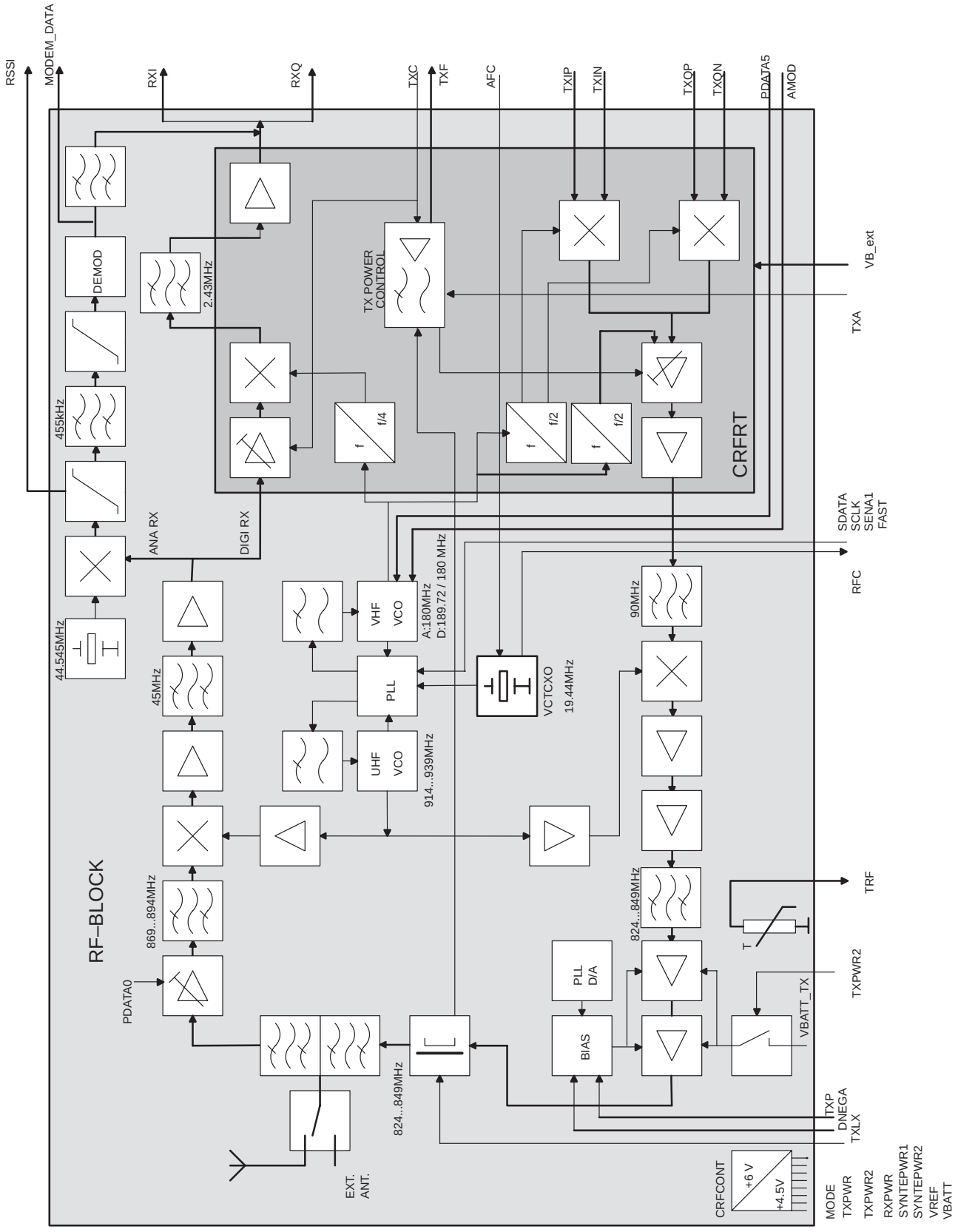
Copyright © Nokia Mobile Phones

Baseband Block Diagram



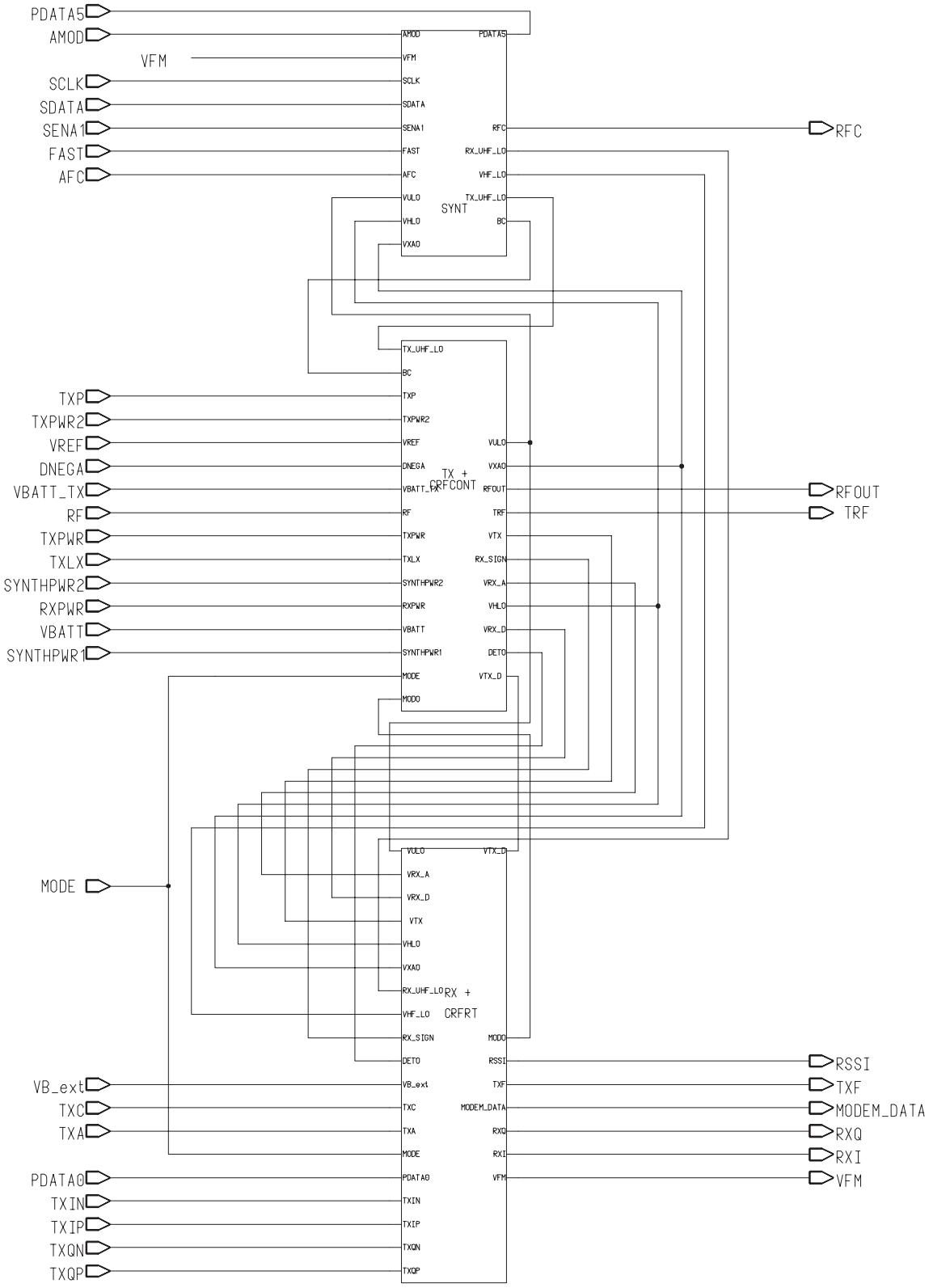
Copyright © Nokia Mobile Phones

RF Block Diagram



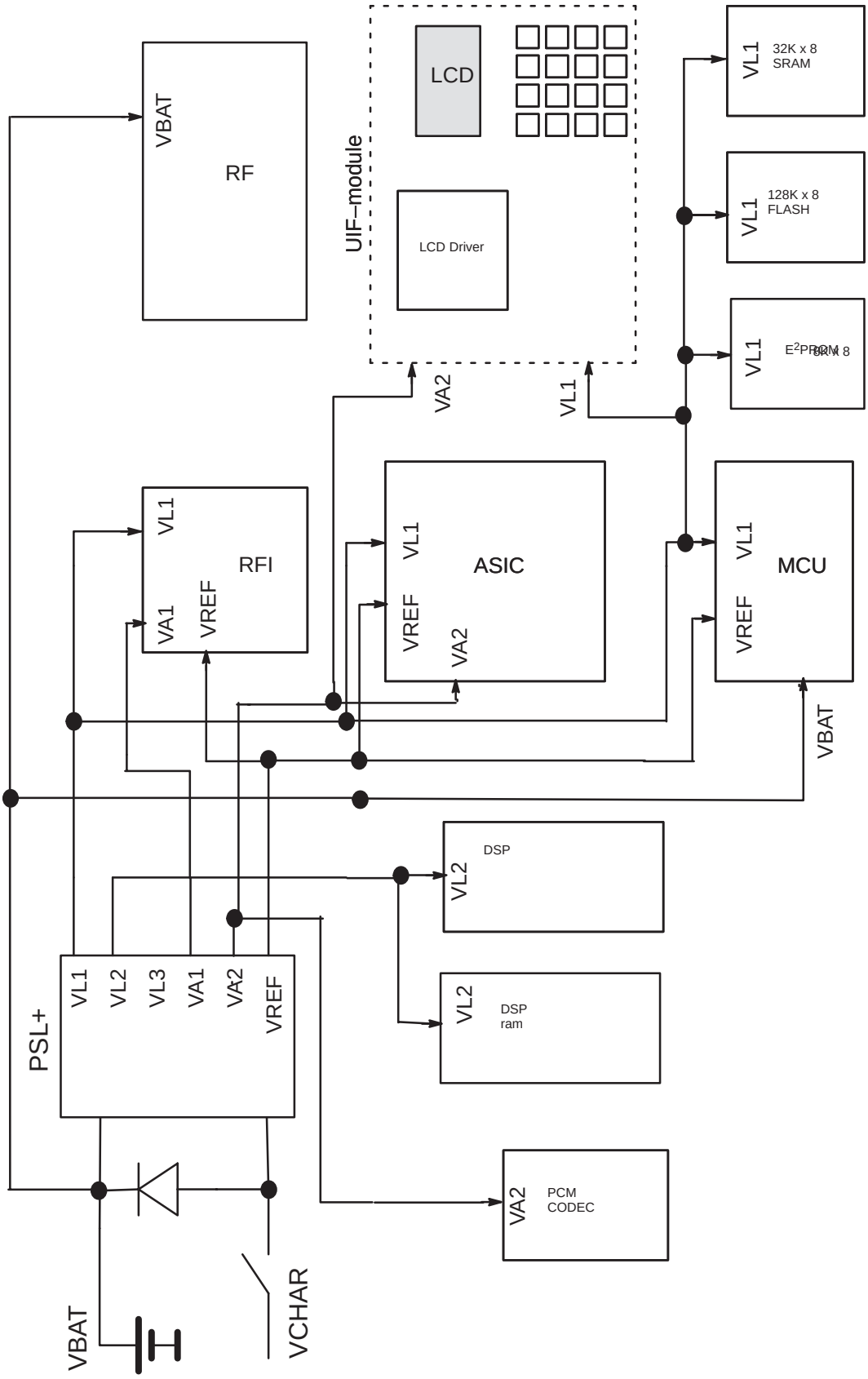
Copyright © Nokia Mobile Phones

RF Block Interconnection Diagram (GP4) (Version 5.63 ; edit 120)



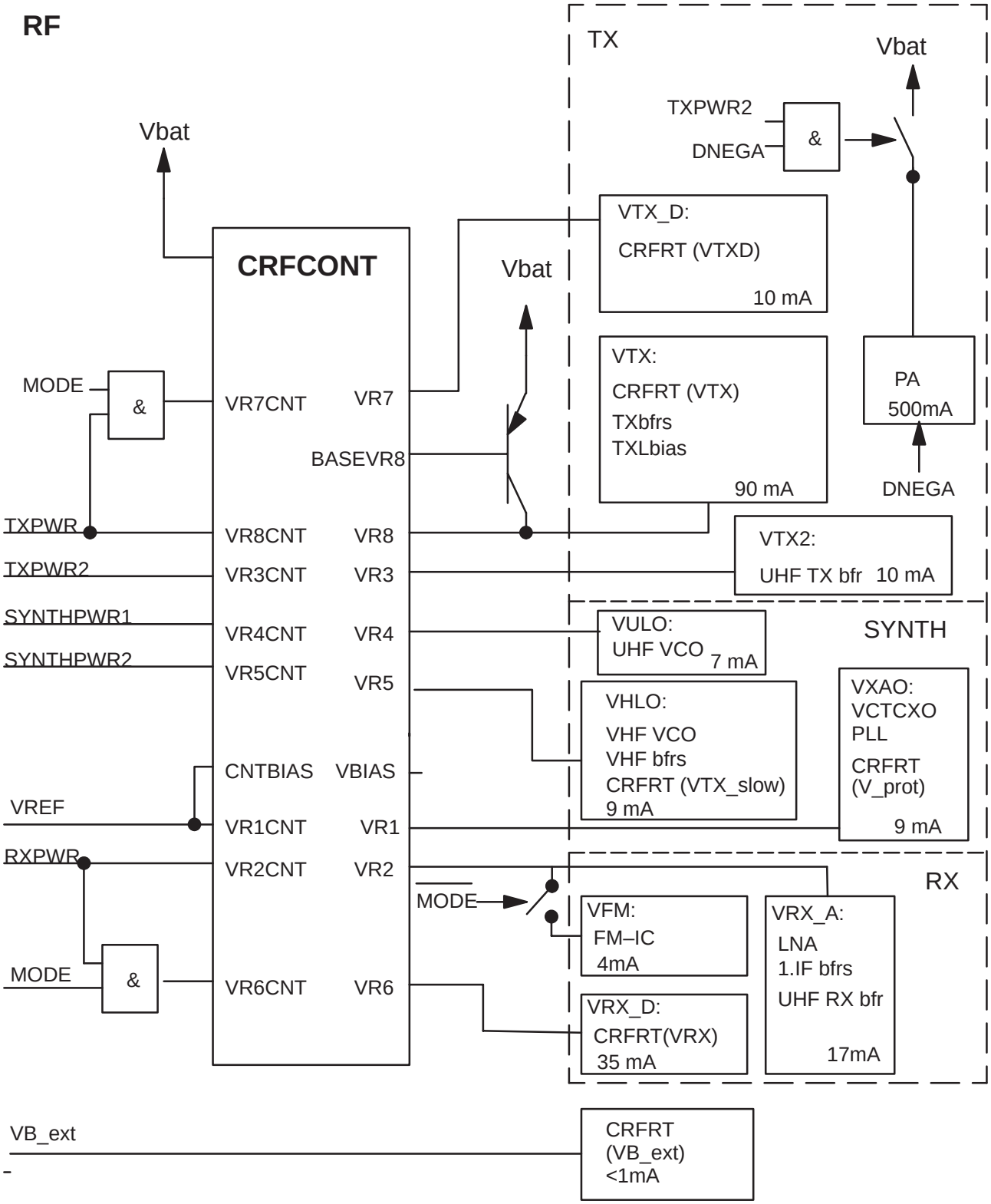
Copyright © Nokia Mobile Phones

Baseband Power Distribution Diagram



Copyright © Nokia Mobile Phones

RF Power Disribution Diagram



Copyright © Nokia Mobile Phones

Parts List of GR4

EDMS Issue: 6.7 Code: 0200674

ITEM	CODE	DESCRIPTION	VALUE	TYPE
R001	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R002	1430726	Chip resistor	100	5 % 0.063 W 0402
R003	1430726	Chip resistor	100	5 % 0.063 W 0402
R004	1430726	Chip resistor	100	5 % 0.063 W 0402
R005	1430726	Chip resistor	100	5 % 0.063 W 0402
R100	1430842	Chip resistor	680 k	1 % 0.063 W 0402
R101	1430840	Chip resistor	220 k	1 % 0.063 W 0402
R102	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R103	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R104	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R106	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R107	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R108	1430764	Chip resistor	3.3 k	5 % 0.063 W 0402
R109	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R110	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R111	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R112	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R114	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R115	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R116	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R117	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R118	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R151	1430726	Chip resistor	100	5 % 0.063 W 0402
R152	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R153	1430726	Chip resistor	100	5 % 0.063 W 0402
R154	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R155	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R158	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R159	1412279	Chip resistor	2.2	5 % 0.1 W 0805
R300	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R302	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R303	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R304	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R305	1430726	Chip resistor	100	5 % 0.063 W 0402
R307	1430726	Chip resistor	100	5 % 0.063 W 0402
R309	1430726	Chip resistor	100	5 % 0.063 W 0402
R313	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R314	1430726	Chip resistor	100	5 % 0.063 W 0402
R316	1430726	Chip resistor	100	5 % 0.063 W 0402
R317	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R319	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R320	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R321	1430778	Chip resistor	10 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R322	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R326	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R400	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R401	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R402	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R404	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R406	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R407	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R410	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R411	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R412	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R414	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R416	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R417	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R418	1430700	Chip resistor	10	5 % 0.063 W 0402
R419	1430726	Chip resistor	100	5 % 0.063 W 0402
R420	1430726	Chip resistor	100	5 % 0.063 W 0402
R429	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R430	1430726	Chip resistor	100	5 % 0.063 W 0402
R431	1430726	Chip resistor	100	5 % 0.063 W 0402
R433	1430726	Chip resistor	100	5 % 0.063 W 0402
R434	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R435	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R450	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R457	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R458	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R510	1430718	Chip resistor	47	5 % 0.063 W 0402
R511	1430718	Chip resistor	47	5 % 0.063 W 0402
R520	1430792	Chip resistor	33 k	5 % 0.063 W 0402
R521	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R522	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R523	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R524	1430776	Chip resistor	8.2 k	5 % 0.063 W 0402
R543	1430786	Chip resistor	18 k	5 % 0.063 W 0402
R544	1430700	Chip resistor	10	5 % 0.063 W 0402
R549	1430700	Chip resistor	10	5 % 0.063 W 0402
R550	1430734	Chip resistor	220	5 % 0.063 W 0402
R551	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R552	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R553	1430700	Chip resistor	10	5 % 0.063 W 0402
R554	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R556	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R563	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R564	1430832	Chip resistor	2.7 k	5 % 0.063 W 0402
R565	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R566	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R570	1430800	Chip resistor	68 k	5 % 0.063 W 0402
R571	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R573	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R574	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R580	1430726	Chip resistor	100	5 % 0.063 W 0402
R581	1430700	Chip resistor	10	5 % 0.063 W 0402
R582	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R583	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R590	1430700	Chip resistor	10	5 % 0.063 W 0402
R593	1430700	Chip resistor	10	5 % 0.063 W 0402
R594	1430700	Chip resistor	10	5 % 0.063 W 0402
R601	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R602	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R603	1800659	NTC resistor	47 k	10 % 0.12 W 0805
R701	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R702	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R703	1430832	Chip resistor	2.7 k	5 % 0.063 W 0402
R704	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R705	1430726	Chip resistor	100	5 % 0.063 W 0402
R706	1430700	Chip resistor	10	5 % 0.063 W 0402
R708	1430734	Chip resistor	220	5 % 0.063 W 0402
R709	1430726	Chip resistor	100	5 % 0.063 W 0402
R710	1430700	Chip resistor	10	5 % 0.063 W 0402
R711	1430744	Chip resistor	470	5 % 0.063 W 0402
R712	1430832	Chip resistor	2.7 k	5 % 0.063 W 0402
R713	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R714	1430700	Chip resistor	10	5 % 0.063 W 0402
R715	1430744	Chip resistor	470	5 % 0.063 W 0402
R716	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R717	1430734	Chip resistor	220	5 % 0.063 W 0402
R718	1430744	Chip resistor	470	5 % 0.063 W 0402
R719	1430726	Chip resistor	100	5 % 0.063 W 0402
R720	1430744	Chip resistor	470	5 % 0.063 W 0402
R721	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R722	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R723	1430710	Chip resistor	22	5 % 0.063 W 0402
R724	1430744	Chip resistor	470	5 % 0.063 W 0402
R725	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R726	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R728	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R729	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R730	1430726	Chip resistor	100	5 % 0.063 W 0402
R732	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R736	1430744	Chip resistor	470	5 % 0.063 W 0402
R737	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R740	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R741	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R742	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R743	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R745	1430764	Chip resistor	3.3 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R746	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R747	1430786	Chip resistor	18 k	5 % 0.063 W 0402
R748	1430276	Chip resistor	47 k	2 % 0.063 W 0603
R750	1430310	Chip resistor	75 k	2 % 0.063 W 0603
R770	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R771	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R776	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R777	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R778	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R779	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R781	1430790	Chip resistor	27 k	5 % 0.063 W 0402
R782	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R783	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R799	1430752	Chip resistor	820	5 % 0.063 W 0402
R801	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R802	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R803	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R804	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R811	1430726	Chip resistor	100	5 % 0.063 W 0402
R812	1430726	Chip resistor	100	5 % 0.063 W 0402
R888	1430690	Chip jumper		0402
R901	1430700	Chip resistor	10	5 % 0.063 W 0402
R904	1430744	Chip resistor	470	5 % 0.063 W 0402
R905	1430744	Chip resistor	470	5 % 0.063 W 0402
R906	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R907	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R908	1430726	Chip resistor	100	5 % 0.063 W 0402
R909	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R911	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R912	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R913	1430726	Chip resistor	100	5 % 0.063 W 0402
R914	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R915	1430734	Chip resistor	220	5 % 0.063 W 0402
R916	1430710	Chip resistor	22	5 % 0.063 W 0402
R917	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R921	1430766	Chip resistor	3.9 k	5 % 0.063 W 0402
R922	1430760	Chip resistor	1.8 k	5 % 0.063 W 0402
R923	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R924	1412279	Chip resistor	2.2	5 % 0.1 W 0805
R926	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R927	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R928	1430738	Chip resistor	270	5 % 0.063 W 0402
R929	1430760	Chip resistor	1.8 k	5 % 0.063 W 0402
R930	1420191	Chip resistor	0.1	5 % 0.12 W 1206
R931	1430726	Chip resistor	100	5 % 0.063 W 0402
R932	1430752	Chip resistor	820	5 % 0.063 W 0402
R933	1430744	Chip resistor	470	5 % 0.063 W 0402
R935	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R936	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R937	1430722	Chip resistor	68	5 % 0.063 W 0402
R938	1430744	Chip resistor	470	5 % 0.063 W 0402
R939	1430726	Chip resistor	100	5 % 0.063 W 0402
R940	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R941	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R944	1430726	Chip resistor	100	5 % 0.063 W 0402
R945	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R956	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R959	1430752	Chip resistor	820	5 % 0.063 W 0402
R966	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R967	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R968	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R970	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R971	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R978	1430778	Chip resistor	10 k	5 % 0.063 W 0402
C002	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C003	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C004	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C005	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C007	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C008	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C009	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C010	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C011	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C012	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C013	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C102	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C104	2312296	Ceramic cap.		Y5 V 1210
C105	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C106	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C107	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C110	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C111	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C112	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C113	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C115	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C116	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C117	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C120	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C121	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C122	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C130	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C131	2610005	Tantalum cap.	10 u	20 % 16 V 3.5x2.8x1.9
C151	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C152	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C155	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C156	2320560	Ceramic cap.	100 p	5 % 50 V 0402

Copyright © Nokia Mobile Phones

C157	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C158	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C159	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C160	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C162	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C201	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C202	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C203	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C204	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C211	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C300	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C302	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C303	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C304	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C311	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C312	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C314	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C316	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C317	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C400	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C401	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C402	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C403	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C404	2320752	Ceramic cap.	2.2 n	10 % 50 V 0402
C409	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C410	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C411	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C412	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C421	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C422	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C451	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C457	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C458	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C459	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C461	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C462	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C469	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C470	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C507	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C508	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C509	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C521	2310248	Ceramic cap.	4.7 n	5 % 50 V 1206
C522	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C523	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C524	2320558	Ceramic cap.	82 p	5 % 50 V 0402
C525	2320558	Ceramic cap.	82 p	5 % 50 V 0402
C528	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C542	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402

Copyright © Nokia Mobile Phones

C543	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C544	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C549	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C550	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C551	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C552	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C553	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C554	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C555	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C560	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C561	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C562	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C563	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C564	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C570	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C571	2320752	Ceramic cap.	2.2 n	10 % 50 V 0402
C572	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C573	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C574	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C575	2610024	Tantalum cap.	2.2 u	20 % 16 V 3.2x1.6x1.6
C576	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C583	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C585	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C586	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C590	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C593	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C594	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C595	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C597	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C598	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C601	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C602	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C603	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C605	2610005	Tantalum cap.	10 u	20 % 16 V 3.5x2.8x1.9
C606	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C607	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C608	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C609	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C610	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C612	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C613	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C701	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C702	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C703	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C704	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C705	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C706	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C707	2320546	Ceramic cap.	27 p	5 % 50 V 0402

Copyright © Nokia Mobile Phones

C708	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C709	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C710	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C711	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C712	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C713	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C714	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C715	2320594	Ceramic cap.	2.7 n	5 % 50 V 0402
C716	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C717	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C718	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C719	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C721	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C722	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C724	2320536	Ceramic cap.	10 p	5 % 50 V 0402
C725	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C726	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C727	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C728	2310490	Ceramic cap.	360 p	2 % 50 V 0805
C729	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C730	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C731	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C733	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C734	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C735	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C736	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C737	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C738	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C739	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C740	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C741	2320558	Ceramic cap.	82 p	5 % 50 V 0402
C742	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C743	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C744	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C746	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C748	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C749	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C750	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C751	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C752	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C753	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C754	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C755	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C756	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C758	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C759	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C777	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C781	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402

Copyright © Nokia Mobile Phones

C782	2320594	Ceramic cap.	2.7 n	5 % 50 V 0402
C783	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C798	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C799	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C800	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C801	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C802	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C804	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C805	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C807	2310463	Ceramic cap.	220 p	5 % 50 V 0805
C808	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C809	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C810	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C811	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C812	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C813	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C814	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C815	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C817	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C818	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C900	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C901	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C904	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C905	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C906	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C907	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C909	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C910	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C911	2320534	Ceramic cap.	8.2 p	0.25 % 50 V 0402
C912	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C914	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C915	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C916	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C919	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C922	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C923	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C924	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C925	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C926	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C927	2320526	Ceramic cap.	3.9 p	0.25 % 50 V 0402
C930	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C931	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C932	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C933	2604304	Tantalum cap.	2.2 u	20 % 20 V 3.5x2.8x1.9
C934	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C936	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C938	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C939	2320546	Ceramic cap.	27 p	5 % 50 V 0402

Copyright © Nokia Mobile Phones

C944	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C950	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C955	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C969	2320514	Ceramic cap.	1.2 p	0.25 % 50 V 0402
C989	2320516	Ceramic cap.	1.5 p	0.25 % 50 V 0402
C992	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C995	2610005	Tantalum cap.	10 u	20 % 16 V 3.5x2.8x1.9
C996	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C997	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C998	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C999	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
L001	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L100	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L300	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L507	3641538	Chip coil	39 n	20% Q=40/250 MHz 0805
L560	3641538	Chip coil	39 n	20% Q=40/250 MHz 0805
L571	3641546	Chip coil	82 n	10% Q=40/150 MHz 0805
L701	3641560	Chip coil	220 n	10% Q=30/100 MHz 0805
L702	3608365	Chip coil	100 u	5 % Q=18 3.2x2.5
L703	3641282	Chip coil		5 % Q=30/7.96 MHz 1008
L704	3641302	Chip coil	470 n	5 % Q=30/25 MHz 1008
L705	3660102	Coil adj.	320 u	2 % Q=80 5X5
L802	3645019	Chip coil	82 n	5 % Q=18/100 MHz 0805
L902	3645019	Chip coil	82 n	5 % Q=18/100 MHz 0805
B701	4510016	Crystal	44.545 M	
G500	4352900	Vco914–944mhz 4.7v/8.5ma	smd	SMD
G580	4351120	SM, VCTCXO 19.44mhz 1kohm//10pf		
Z710	4510001	Saw filter	881.5+–12.5 M	5.2x5.2
Z711	4510007	XTAL filter	45 M	+–15KHZ 4POLE
Z712	4550094	Cer.filt 455+–15khz 1kohm 7.5x6.5		7.5x6.5
Z713	4550028	Cer.reson 2.45mhz+–0.5% d2.95x7.2		d2.95x7.2
Z714	4550028	Cer.reson 2.45mhz+–0.5% d2.95x7.2		d2.95x7.2
Z715	4550028	Cer.reson 2.45mhz+–0.5% d2.95x7.2		d2.95x7.2
Z920	4510011	Saw filter	836.5+–12.5 M	/3 5.2x5.2
Z921	4512042	Dupl 824–849/869–894mhz 39.4x14.5		39.4x14.5
Z990	9780093	Semi–rigid coaxial		4D23306 NHC–1NHC–1X
V100	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V101	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V103	4110074	Schottky diode	STPS340U	40 V 3 A SOD6
V104	4210020	Transistor	BCP69–25	pnp 20 V 1 A SOT223
V105	4113828	Trans. supr.	SMBJ28A	DO214AA
V106	4200226	Darl. transistor	BCV27	npn 30 V 300 mA SOT23
V107	4200226	Darl. transistor	BCV27	npn 30 V 300 mA SOT23
V108	4110117	Zener diode	BZX84	5 % 3.9 V 0.3 W SOT23
V109	4200909	Transistor	BC858B/BCW30	pnp 30 V 100 mA SOT23
V110	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V300	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V400	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23

Copyright © Nokia Mobile Phones

V401	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V402	4210050	Transistor	DTA114EE	pnp RB V EM3
V450	4210050	Transistor	DTA114EE	pnp RB V EM3
V451	4117998	Precision voltage reference 4.096		4.096
V550	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V551	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V570	4110018	Cap. diode	BB135	30 V SOD323
V571	4210052	Transistor	DTC114EE	npn RB V EM3
V601	4100278	Diode x 2	BAV70	70V 200mA COMCAT.SOT23
V610	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V701	4210246	Transistor	BFP183	npn US V SOT143
V703	4219922	Transistor x 2		UM6
V705	4115802	Sch. diode x 2	4V	30 mA SOT23
V706	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V707	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V708	4219922	Transistor x 2		UM6
V729	4219922	Transistor x 2		UM6
V770	4210246	Transistor	BFP183	npn US V SOT143
V801	4115802	Sch. diode x 2	4V	30 mA SOT23
V902	4200909	Transistor	BC858B/BCW30	pnp 30 V 100 mA SOT23
V903	4210246	Transistor	BFP183	npn US V SOT143
V904	4210090	Transistor	BFG540/X	npn 15 V 129 mA SOT143
V905	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V906	4219922	Transistor x 2		UM6
V908	4202456	MosFet		p–ch 50 V 8 A TO252
V910	4210346	MosFet GaAs	CLY5	n–ch 9V V
V911	4210347	MosFet GaAs	CLY15	n–ch 9V V SOT223
V912	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V917	4210050	Transistor	DTA114EE	pnp RB V EM3
V918	4108647	Pin diode	BAR14–1	100 V SOT23
V919	4110008	Schottky diode	HSMS2825	8 V SOT143
V925	4210052	Transistor	DTC114EE	npn RB V EM3
V929	4106819	Zener diode	BZX84	5 % 5.1 V 0.3 W SOT23
V932	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V960	4210100	Transistor	BC848W	npn 30 V SOT323
V970	4210246	Transistor	BFP183	npn US V SOT143
D200	4370025	IC, tms320c541/d36704 di5 sqfp1DSP		SQFP100
D201	4346010	IC, SRAM		32kx8 bit 70 ns TSO28
D202	4346010	IC, SRAM		32kx8 bit 70 ns TSO28
D300	4340198	IC, flash memory	E28F004	TSOP40
D302	4375935	IC, MCU		QFP80A
D305	4346004	IC, SRAM		32kx8 bit 100 ns
D307	4342264	IC, EEPROM		SO8S
D401	4375080	D32a/udsa2 system asic	tqfp144	TQFP144
D402	4340126	IC, 1xnand 2input cmos	ssTC7S00F	SSO5
D403	4340126	IC, 1xnand 2input cmos	ssTC7S00F	SSO5
D570	4340166	IC, 1xbilateral switch	ss TC4S66	SSO5
N100	4375588	IC, PSL+ power supply		SO24W

Copyright © Nokia Mobile Phones

N150	4340013	St5090 audio codec so28w	SO28W
N400	4340066	IC, pgr.op.amp,+–1/+–8v sTLC271IDR	SO8
N450	4370015	IC, ASIC	SQFP64
N540	4340005	IC, 2xsynth 1.2ghz 3v ssoUMA1018M	SSO20
N600	4370094	Crfcontc reg.4.5v vref2.5v vsop28	VSOP28
N600	4370095	Crfcontf 8xreg4.5v vref2v5 vsop28	VSOP28
N701	4370125	Acrfrt_st tx.mod+rxif+pwc sqfp44	SQFP44
N702	4349694	IC, if amp+fm detector sso TA31136	SSO16
X001	5469792	Syst.conn. q	4DC+JACK+16AF+1RF
X101	5431718	Flexfoil connect 1x30 0.5mm smd	
X900	9510277	Antenna clip	4D25006 NHD–4
	9854016	PCB GR4 134.0X88.0 M6 2/PA NHC–4	
	9854016	PC board GR4 134.0x88.0 m6 2/pa	nhc–4 NHC–4

Copyright © Nokia Mobile Phones

Parts List of GP4

EDMS Issue: 7.0 Code: 0200900

ITEM	CODE	DESCRIPTION	VALUE	TYPE
R001	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R002	1430726	Chip resistor	100	5 % 0.063 W 0402
R003	1430726	Chip resistor	100	5 % 0.063 W 0402
R004	1430726	Chip resistor	100	5 % 0.063 W 0402
R005	1430726	Chip resistor	100	5 % 0.063 W 0402
R100	1430842	Chip resistor	680 k	1 % 0.063 W 0402
R101	1430840	Chip resistor	220 k	1 % 0.063 W 0402
R102	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R103	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R104	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R106	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R107	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R108	1430764	Chip resistor	3.3 k	5 % 0.063 W 0402
R109	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R110	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R111	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R112	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R114	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R115	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R116	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R117	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R118	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R151	1430726	Chip resistor	100	5 % 0.063 W 0402
R152	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R153	1430726	Chip resistor	100	5 % 0.063 W 0402
R154	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R155	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R158	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R159	1412279	Chip resistor	2.2	5 % 0.1 W 0805
R300	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R302	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R303	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R304	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R305	1430726	Chip resistor	100	5 % 0.063 W 0402
R307	1430726	Chip resistor	100	5 % 0.063 W 0402
R309	1430726	Chip resistor	100	5 % 0.063 W 0402
R313	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R314	1430726	Chip resistor	100	5 % 0.063 W 0402
R316	1430726	Chip resistor	100	5 % 0.063 W 0402
R317	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R319	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R320	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R321	1430778	Chip resistor	10 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R322	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R324	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R326	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R400	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R401	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R402	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R404	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R406	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R407	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R410	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R411	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R412	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R414	1430744	Chip resistor	470	5 % 0.063 W 0402
R416	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R417	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R418	1430718	Chip resistor	47	5 % 0.063 W 0402
R419	1430726	Chip resistor	100	5 % 0.063 W 0402
R420	1430726	Chip resistor	100	5 % 0.063 W 0402
R429	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R430	1430726	Chip resistor	100	5 % 0.063 W 0402
R431	1430726	Chip resistor	100	5 % 0.063 W 0402
R433	1430726	Chip resistor	100	5 % 0.063 W 0402
R434	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R435	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R450	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R457	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R458	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R510	1430718	Chip resistor	47	5 % 0.063 W 0402
R511	1430718	Chip resistor	47	5 % 0.063 W 0402
R520	1430792	Chip resistor	33 k	5 % 0.063 W 0402
R521	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R522	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R523	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R524	1430776	Chip resistor	8.2 k	5 % 0.063 W 0402
R543	1430786	Chip resistor	18 k	5 % 0.063 W 0402
R544	1430700	Chip resistor	10	5 % 0.063 W 0402
R549	1430700	Chip resistor	10	5 % 0.063 W 0402
R550	1430734	Chip resistor	220	5 % 0.063 W 0402
R551	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R552	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R553	1430700	Chip resistor	10	5 % 0.063 W 0402
R554	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R556	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R565	1430800	Chip resistor	68 k	5 % 0.063 W 0402
R566	1430738	Chip resistor	270	5 % 0.063 W 0402
R570	1430800	Chip resistor	68 k	5 % 0.063 W 0402
R571	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R573	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R574	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R580	1430726	Chip resistor	100	5 % 0.063 W 0402
R581	1430700	Chip resistor	10	5 % 0.063 W 0402
R582	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R583	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R590	1430700	Chip resistor	10	5 % 0.063 W 0402
R593	1430700	Chip resistor	10	5 % 0.063 W 0402
R594	1430700	Chip resistor	10	5 % 0.063 W 0402
R601	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R602	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R603	1800659	NTC resistor	47 k	10 % 0.12 W 0805
R701	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R702	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R703	1430832	Chip resistor	2.7 k	5 % 0.063 W 0402
R704	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R705	1430726	Chip resistor	100	5 % 0.063 W 0402
R706	1430700	Chip resistor	10	5 % 0.063 W 0402
R708	1430740	Chip resistor	330	5 % 0.063 W 0402
R710	1430700	Chip resistor	10	5 % 0.063 W 0402
R711	1430746	Chip resistor	560	5 % 0.063 W 0402
R712	1430832	Chip resistor	2.7 k	5 % 0.063 W 0402
R713	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R714	1430700	Chip resistor	10	5 % 0.063 W 0402
R715	1430744	Chip resistor	470	5 % 0.063 W 0402
R716	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R717	1430690	Chip jumper		0402
R718	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R719	1430744	Chip resistor	470	5 % 0.063 W 0402
R720	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R721	1430776	Chip resistor	8.2 k	5 % 0.063 W 0402
R722	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R723	1430700	Chip resistor	10	5 % 0.063 W 0402
R724	1430744	Chip resistor	470	5 % 0.063 W 0402
R725	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R726	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R728	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R729	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R730	1430726	Chip resistor	100	5 % 0.063 W 0402
R732	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R736	1430744	Chip resistor	470	5 % 0.063 W 0402
R737	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R740	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R741	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R742	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R743	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R745	1430764	Chip resistor	3.3 k	5 % 0.063 W 0402
R746	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R747	1430786	Chip resistor	18 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R748	1430276	Chip resistor	47 k	2 % 0.063 W 0603
R750	1430310	Chip resistor	75 k	2 % 0.063 W 0603
R770	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R771	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R776	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R777	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R778	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R779	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R781	1430790	Chip resistor	27 k	5 % 0.063 W 0402
R783	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R799	1430744	Chip resistor	470	5 % 0.063 W 0402
R801	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R802	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R803	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R804	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R812	1430734	Chip resistor	220	5 % 0.063 W 0402
R888	1430690	Chip jumper		0402
R901	1430700	Chip resistor	10	5 % 0.063 W 0402
R904	1430744	Chip resistor	470	5 % 0.063 W 0402
R905	1430744	Chip resistor	470	5 % 0.063 W 0402
R906	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R907	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R908	1430726	Chip resistor	100	5 % 0.063 W 0402
R909	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R911	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R912	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R913	1430726	Chip resistor	100	5 % 0.063 W 0402
R914	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R915	1430734	Chip resistor	220	5 % 0.063 W 0402
R916	1430710	Chip resistor	22	5 % 0.063 W 0402
R917	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R921	1430766	Chip resistor	3.9 k	5 % 0.063 W 0402
R922	1430760	Chip resistor	1.8 k	5 % 0.063 W 0402
R923	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R924	1412279	Chip resistor	2.2	5 % 0.1 W 0805
R926	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R927	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R928	1430734	Chip resistor	220	5 % 0.063 W 0402
R929	1430760	Chip resistor	1.8 k	5 % 0.063 W 0402
R930	1420200	Chip resistor	0.22	5 % 0.2 W 1206
R931	1430734	Chip resistor	220	5 % 0.063 W 0402
R932	1430752	Chip resistor	820	5 % 0.063 W 0402
R933	1430744	Chip resistor	470	5 % 0.063 W 0402
R935	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R936	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R937	1430722	Chip resistor	68	5 % 0.063 W 0402
R938	1430744	Chip resistor	470	5 % 0.063 W 0402
R939	1430726	Chip resistor	100	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R940	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R941	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R944	1430726	Chip resistor	100	5 % 0.063 W 0402
R945	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R956	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R959	1430752	Chip resistor	820	5 % 0.063 W 0402
R966	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R967	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R968	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R970	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R971	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R978	1430778	Chip resistor	10 k	5 % 0.063 W 0402
C003	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C004	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C005	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C008	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C009	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C010	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C011	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C012	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C013	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C102	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C104	2312296	Ceramic cap.		Y5 V 1210
C105	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C106	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C107	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C110	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C111	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C112	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C113	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C115	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C116	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C117	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C120	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C121	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C122	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C130	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C131	2610005	Tantalum cap.	10 u	20 % 16 V 3.5x2.8x1.9
C151	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C152	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C155	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C156	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C157	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C158	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C159	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C160	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C162	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C201	2310791	Ceramic cap.	33 n	20 % 50 V 0805

Copyright © Nokia Mobile Phones

C202	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C203	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C204	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C211	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C300	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C302	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C303	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C304	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C311	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C312	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C314	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C316	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C317	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C400	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C401	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C402	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C403	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C404	2320752	Ceramic cap.	2.2 n	10 % 50 V 0402
C409	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C410	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C411	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C412	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C421	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C422	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C451	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C457	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C458	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C459	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C461	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C462	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C469	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C470	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C507	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C508	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C509	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C521	2310248	Ceramic cap.	4.7 n	5 % 50 V 1206
C522	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C523	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C524	2320558	Ceramic cap.	82 p	5 % 50 V 0402
C525	2320558	Ceramic cap.	82 p	5 % 50 V 0402
C528	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C542	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C543	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C544	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C549	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C550	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C551	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C552	2320604	Ceramic cap.	18 p	5 % 50 V 0402

Copyright © Nokia Mobile Phones

C553	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C554	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C555	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C560	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C561	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C562	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C563	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C564	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C570	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C571	2320752	Ceramic cap.	2.2 n	10 % 50 V 0402
C572	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C573	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C574	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C575	2610024	Tantalum cap.	2.2 u	20 % 16 V 3.2x1.6x1.6
C576	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C583	2320536	Ceramic cap.	10 p	5 % 50 V 0402
C585	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C586	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C590	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C593	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C594	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C595	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C597	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C598	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C601	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C603	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C605	2610005	Tantalum cap.	10 u	20 % 16 V 3.5x2.8x1.9
C606	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C608	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C609	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C701	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C702	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C703	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C704	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C705	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C706	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C707	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C708	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C709	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C710	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C712	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C713	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C714	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C715	2320594	Ceramic cap.	2.7 n	5 % 50 V 0402
C716	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C717	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C718	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C719	2320728	Ceramic cap.	220 p	10 % 50 V 0402

Copyright © Nokia Mobile Phones

C720	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C721	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C722	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C724	2320536	Ceramic cap.	10 p	5 % 50 V 0402
C725	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C726	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C727	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C728	2310490	Ceramic cap.	360 p	2 % 50 V 0805
C729	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C730	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C731	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C733	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C734	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C735	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C736	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C737	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C738	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C739	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C741	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C742	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C743	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C744	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C746	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C748	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C750	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C751	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C752	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C753	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C755	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C756	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C758	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C759	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C777	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C781	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C782	2320594	Ceramic cap.	2.7 n	5 % 50 V 0402
C783	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C798	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C799	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C800	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C801	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C802	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C804	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C805	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C807	2310463	Ceramic cap.	220 p	5 % 50 V 0805
C809	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C810	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C811	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C812	2320538	Ceramic cap.	12 p	5 % 50 V 0402

Copyright © Nokia Mobile Phones

C813	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C814	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C815	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C817	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C818	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C900	2320534	Ceramic cap.	8.2 p	0.25 % 50 V 0402
C901	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C904	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C905	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C906	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C907	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C910	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C911	2320534	Ceramic cap.	8.2 p	0.25 % 50 V 0402
C912	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C914	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C915	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C916	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C919	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C922	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C923	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C924	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C925	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C926	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C927	2320526	Ceramic cap.	3.9 p	0.25 % 50 V 0402
C930	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C931	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C932	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C933	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C934	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C936	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C938	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C939	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C944	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C950	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C955	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C969	2320514	Ceramic cap.	1.2 p	0.25 % 50 V 0402
C989	2320516	Ceramic cap.	1.5 p	0.25 % 50 V 0402
C992	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C995	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C996	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C997	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C998	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C999	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
L001	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L100	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L300	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L507	3645023	Chip coil	39 n	10% Q=18/100 MHz 0805
L560	3645023	Chip coil	39 n	10% Q=18/100 MHz 0805

Copyright © Nokia Mobile Phones

L571	3641546	Chip coil	82 n	10% Q=40/150 MHz 0805
L701	3645025	Chip coil	220 n	10 % Q=20/25 MHz 0805
L702	3608365	Chip coil	100 u	5 % Q=18 3.2x2.5
L703	3641282	Chip coil		5 % Q=30/7.96 MHz 1008
L704	3645027	Chip coil	470 n	10 % Q=25/25 MHz 0805
L705	3660102	Coil adj.	320 u	2 % Q=80 5X5
L802	3645019	Chip coil	82 n	5 % Q=18/100 MHz 0805
L902	3645019	Chip coil	82 n	5 % Q=18/100 MHz 0805
B701	4510016	Crystal	44.545 M	
G500	4352900	Vco914–944mhz 4.7v/8.5ma	smd	SMD
G580	4510081	VCTCXO	19.44 M	+–2.5PPM 4.7V
Z710	4510001	Saw filter	881.5+–12.5 M	5.2x5.2
Z712	4550094	Cer.filt 455+–15khz 1kohm 7.5x6.5		7.5x6.5
Z714	4550028	Cer.reson 2.45mhz+–0.5% d2.95x7.2		d2.95x7.2
Z715	4550028	Cer.reson 2.45mhz+–0.5% d2.95x7.2		d2.95x7.2
Z719	4510079	XTAL filter	45 M	+–15KHZ 4POLE
Z920	4510011	Saw filter	836.5+–12.5 M	/3 5.2x5.2
Z921	4512042	Dupl 824–849/869–894mhz 39.4x14.5		39.4x14.5
Z990	9780093	Semi–rigid coaxial		4D23306 NHC–1NHC–1X
V100	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V101	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V103	4110074	Schottky diode	STPS340U	40 V 3 A SOD6
V104	4210075	Transistor		SOT223
V105	4113828	Trans. supr.	SMBJ28A	DO214AA
V106	4200226	Darl. transistor	BCV27	npn 30 V 300 mA SOT23
V107	4200226	Darl. transistor	BCV27	npn 30 V 300 mA SOT23
V108	4110117	Zener diode	BZX84	5 % 3.9 V 0.3 W SOT23
V109	4200909	Transistor	BC858B/BCW30	pnp 30 V 100 mA SOT23
V110	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V300	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V301	4100260	Diode x 2	BAW56	70 V 200 mA SOT23
V400	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V401	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V402	4210050	Transistor	DTA114EE	pnp RB V EM3
V450	4210050	Transistor	DTA114EE	pnp RB V EM3
V451	4117998	Precision voltage reference 4.096		4.096
V550	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V551	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V570	4110018	Cap. diode	BB135	30 V SOD323
V571	4210052	Transistor	DTC114EE	npn RB V EM3
V601	4100278	Diode x 2	BAV70	70 V 200 mA COMCAT.SOT23
V610	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V701	4210246	Transistor	BFP183	npn US V SOT143
V703	4219922	Transistor x 2		UM6
V705	4115802	Sch. diode x 2	4V	30 mA SOT23
V706	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V707	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V708	4219922	Transistor x 2		UM6

Copyright © Nokia Mobile Phones

V729	4219922	Transistor x 2		UM6
V770	4210246	Transistor	BFP183	npn US V SOT143
V801	4115802	Sch. diode x 2	4V	30 mA SOT23
V902	4200909	Transistor	BC858B/BCW30	pnp 30 V 100 mA SOT23
V903	4210246	Transistor	BFP183	npn US V SOT143
V904	4210090	Transistor	BFG540/X	npn 15 V 129 mA SOT143
V905	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V906	4219922	Transistor x 2		UM6
V908	4202456	MosFet	IRFR9	p–ch 50 V 8 A TO252
V910	4210346	MosFet GaAs	CLY5	n–ch 9V V
V911	4210347	MosFet GaAs	CLY15	n–ch 9V V SOT223
V912	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V917	4210050	Transistor	DTA114EE	pnp RB V EM3
V918	4108647	Pin diode	BAR14–1	100 V SOT23
V919	4110008	Schottky diode	HSMS2825	8 V SOT143
V925	4210052	Transistor	DTC114EE	npn RB V EM3
V929	4106819	Zener diode	BZX84	5 % 5.1 V 0.3 W SOT23
V932	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V960	4210100	Transistor	BC848W	npn 30 V SOT323
V970	4210246	Transistor	BFP183	npn US V SOT143
D200	4370025	IC, tms320c541/d36704 di5 sqfp1DSP		SQFP100
D201	4346010	IC, SRAM		32kx8 bit 70 ns TSO28
D202	4346010	IC, SRAM		32kx8 bit 70 ns TSO28
D300	4340221	IC, flash memory	E28F004	TSOP40
D302	4375935	IC, MCU		QFP80A
D305	4346004	IC, SRAM		32kx8 bit 100 ns
D307	4342264	IC, EEPROM		SO8S
D401	4375080	D32a/udsa2 system asic	tqfp144	TQFP144
D402	4340126	IC, 1xnand 2input cmos	ssTC7S00F	SSO5
D403	4340126	IC, 1xnand 2input cmos	ssTC7S00F	SSO5
D570	4340166	IC, 1xbilateral switch ss	TC4S66	SSO5
N100	4375588	IC, PSL+ power supply		SO24W
N150	4340013	St5090 audio codec	so28w	SO28W
N400	4340066	IC, pgr.op.amp,+–1/+–8v	sTLC271IDR	SO8
N450	4370015	IC, ASIC		SQFP64
N540	4340005	IC, 2xsynth 1.2ghz 3v	ssoUMA1018M	SSO20
N600	4370095	Crfcontf 8xreg4.5v vref2v5 vsop28		VSOP28
N701	4370125	Acrfrt_st tx.mod+rxif+pwc	sqfp44	SQFP44
N702	4349694	IC, if amp+fm detector sso	TA31136	SSO16
X001	5469033	System conn		4DC+JACK+16AF+1RF
X101	5431718	Flexfoil connect 1x30 0.5mm smd		
X900	9510277	Antenna clip		4D25006 NHD–4
	9850054	PCB GP4 163.7X135.9X1.0 6 2/PA		
	9850054	PC board	GP4	163.7x135.9x1.0 6 2/pa

Copyright © Nokia Mobile Phones

Parts List of GP4 (EFR) EDMS Issue: 3.0 Code: 0201114

ITEM	CODE	DESCRIPTION	VALUE	TYPE
R001	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R002	1430726	Chip resistor	100	5 % 0.063 W 0402
R003	1430726	Chip resistor	100	5 % 0.063 W 0402
R004	1430726	Chip resistor	100	5 % 0.063 W 0402
R005	1430726	Chip resistor	100	5 % 0.063 W 0402
R100	1430842	Chip resistor	680 k	1 % 0.063 W 0402
R101	1430840	Chip resistor	220 k	1 % 0.063 W 0402
R102	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R103	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R104	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R106	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R107	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R108	1430764	Chip resistor	3.3 k	5 % 0.063 W 0402
R109	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R110	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R111	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R112	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R114	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R115	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R116	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R117	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R118	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R151	1430726	Chip resistor	100	5 % 0.063 W 0402
R152	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R153	1430726	Chip resistor	100	5 % 0.063 W 0402
R154	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R155	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R158	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R159	1412279	Chip resistor	2.2	5 % 0.1 W 0805
R300	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R302	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R303	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R304	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R305	1430726	Chip resistor	100	5 % 0.063 W 0402
R307	1430726	Chip resistor	100	5 % 0.063 W 0402
R309	1430726	Chip resistor	100	5 % 0.063 W 0402
R313	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R314	1430726	Chip resistor	100	5 % 0.063 W 0402
R316	1430726	Chip resistor	100	5 % 0.063 W 0402
R317	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R319	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R320	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R321	1430778	Chip resistor	10 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R322	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R324	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R326	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R400	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R401	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R402	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R404	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R406	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R407	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R410	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R411	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R412	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R414	1430744	Chip resistor	470	5 % 0.063 W 0402
R416	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R417	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R418	1430718	Chip resistor	47	5 % 0.063 W 0402
R419	1430726	Chip resistor	100	5 % 0.063 W 0402
R420	1430726	Chip resistor	100	5 % 0.063 W 0402
R429	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R430	1430726	Chip resistor	100	5 % 0.063 W 0402
R431	1430726	Chip resistor	100	5 % 0.063 W 0402
R433	1430726	Chip resistor	100	5 % 0.063 W 0402
R434	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R435	1430830	Chip resistor	1.0 M	5 % 0.063 W 0402
R450	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R457	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R458	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R510	1430718	Chip resistor	47	5 % 0.063 W 0402
R511	1430718	Chip resistor	47	5 % 0.063 W 0402
R520	1430792	Chip resistor	33 k	5 % 0.063 W 0402
R521	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R522	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R523	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R524	1430776	Chip resistor	8.2 k	5 % 0.063 W 0402
R543	1430786	Chip resistor	18 k	5 % 0.063 W 0402
R544	1430700	Chip resistor	10	5 % 0.063 W 0402
R549	1430700	Chip resistor	10	5 % 0.063 W 0402
R550	1430734	Chip resistor	220	5 % 0.063 W 0402
R551	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R552	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R553	1430700	Chip resistor	10	5 % 0.063 W 0402
R554	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R556	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R565	1430800	Chip resistor	68 k	5 % 0.063 W 0402
R566	1430738	Chip resistor	270	5 % 0.063 W 0402
R570	1430800	Chip resistor	68 k	5 % 0.063 W 0402
R571	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R573	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R574	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R580	1430726	Chip resistor	100	5 % 0.063 W 0402
R581	1430700	Chip resistor	10	5 % 0.063 W 0402
R582	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R583	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R590	1430700	Chip resistor	10	5 % 0.063 W 0402
R593	1430700	Chip resistor	10	5 % 0.063 W 0402
R594	1430700	Chip resistor	10	5 % 0.063 W 0402
R601	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R602	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R603	1800659	NTC resistor	47 k	10 % 0.12 W 0805
R701	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R702	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R703	1430832	Chip resistor	2.7 k	5 % 0.063 W 0402
R704	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R705	1430726	Chip resistor	100	5 % 0.063 W 0402
R706	1430700	Chip resistor	10	5 % 0.063 W 0402
R708	1430740	Chip resistor	330	5 % 0.063 W 0402
R710	1430700	Chip resistor	10	5 % 0.063 W 0402
R711	1430746	Chip resistor	560	5 % 0.063 W 0402
R712	1430832	Chip resistor	2.7 k	5 % 0.063 W 0402
R713	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R714	1430700	Chip resistor	10	5 % 0.063 W 0402
R715	1430744	Chip resistor	470	5 % 0.063 W 0402
R716	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R717	1430690	Chip jumper		0402
R718	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R719	1430744	Chip resistor	470	5 % 0.063 W 0402
R720	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R721	1430776	Chip resistor	8.2 k	5 % 0.063 W 0402
R722	1430784	Chip resistor	15 k	5 % 0.063 W 0402
R723	1430700	Chip resistor	10	5 % 0.063 W 0402
R724	1430744	Chip resistor	470	5 % 0.063 W 0402
R725	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R726	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R728	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R729	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R730	1430726	Chip resistor	100	5 % 0.063 W 0402
R732	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R736	1430744	Chip resistor	470	5 % 0.063 W 0402
R737	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R740	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R741	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R742	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R743	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R745	1430764	Chip resistor	3.3 k	5 % 0.063 W 0402
R746	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R747	1430786	Chip resistor	18 k	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R748	1430276	Chip resistor	47 k	2 % 0.063 W 0603
R750	1430310	Chip resistor	75 k	2 % 0.063 W 0603
R770	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R771	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R776	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R777	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R778	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R779	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R781	1430790	Chip resistor	27 k	5 % 0.063 W 0402
R783	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R799	1430744	Chip resistor	470	5 % 0.063 W 0402
R801	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R802	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R803	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R804	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R812	1430734	Chip resistor	220	5 % 0.063 W 0402
R888	1430690	Chip jumper		0402
R901	1430700	Chip resistor	10	5 % 0.063 W 0402
R904	1430744	Chip resistor	470	5 % 0.063 W 0402
R905	1430744	Chip resistor	470	5 % 0.063 W 0402
R906	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R907	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R908	1430726	Chip resistor	100	5 % 0.063 W 0402
R909	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R911	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R912	1430796	Chip resistor	47 k	5 % 0.063 W 0402
R913	1430726	Chip resistor	100	5 % 0.063 W 0402
R914	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R915	1430734	Chip resistor	220	5 % 0.063 W 0402
R916	1430710	Chip resistor	22	5 % 0.063 W 0402
R917	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R921	1430766	Chip resistor	3.9 k	5 % 0.063 W 0402
R922	1430760	Chip resistor	1.8 k	5 % 0.063 W 0402
R923	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R924	1412279	Chip resistor	2.2	5 % 0.1 W 0805
R926	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R927	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R928	1430734	Chip resistor	220	5 % 0.063 W 0402
R929	1430760	Chip resistor	1.8 k	5 % 0.063 W 0402
R930	1420200	Chip resistor	0.22	5 % 0.2 W 1206
R931	1430734	Chip resistor	220	5 % 0.063 W 0402
R932	1430752	Chip resistor	820	5 % 0.063 W 0402
R933	1430744	Chip resistor	470	5 % 0.063 W 0402
R935	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R936	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R937	1430722	Chip resistor	68	5 % 0.063 W 0402
R938	1430744	Chip resistor	470	5 % 0.063 W 0402
R939	1430726	Chip resistor	100	5 % 0.063 W 0402

Copyright © Nokia Mobile Phones

R940	1430754	Chip resistor	1.0 k	5 % 0.063 W 0402
R941	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R944	1430726	Chip resistor	100	5 % 0.063 W 0402
R945	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R956	1430788	Chip resistor	22 k	5 % 0.063 W 0402
R959	1430752	Chip resistor	820	5 % 0.063 W 0402
R966	1430778	Chip resistor	10 k	5 % 0.063 W 0402
R967	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R968	1430804	Chip resistor	100 k	5 % 0.063 W 0402
R970	1430770	Chip resistor	4.7 k	5 % 0.063 W 0402
R971	1430762	Chip resistor	2.2 k	5 % 0.063 W 0402
R978	1430778	Chip resistor	10 k	5 % 0.063 W 0402
C003	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C004	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C005	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C008	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C009	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C010	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C011	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C012	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C013	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C102	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C104	2312296	Ceramic cap.		Y5 V 1210
C105	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C106	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C107	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C110	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C111	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C112	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C113	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C115	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C116	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C117	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C120	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C121	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C122	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C130	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C131	2610005	Tantalum cap.	10 u	20 % 16 V 3.5x2.8x1.9
C151	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C152	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C155	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C156	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C157	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C158	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C159	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C160	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C162	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C201	2310791	Ceramic cap.	33 n	20 % 50 V 0805

Copyright © Nokia Mobile Phones

C202	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C203	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C204	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C211	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C300	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C302	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C303	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C304	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C311	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C312	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C314	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C316	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C317	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C400	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C401	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C402	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C403	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C404	2320752	Ceramic cap.	2.2 n	10 % 50 V 0402
C409	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C410	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C411	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C412	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C421	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C422	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C451	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C457	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C458	2611668	Tantalum cap.	4.7 u	20 % 10 V 3.2x1.6x1.6
C459	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C461	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C462	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C469	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C470	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C507	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C508	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C509	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C521	2310248	Ceramic cap.	4.7 n	5 % 50 V 1206
C522	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C523	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C524	2320558	Ceramic cap.	82 p	5 % 50 V 0402
C525	2320558	Ceramic cap.	82 p	5 % 50 V 0402
C528	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C542	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C543	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C544	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C549	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C550	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C551	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C552	2320604	Ceramic cap.	18 p	5 % 50 V 0402

Copyright © Nokia Mobile Phones

C553	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C554	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C555	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C560	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C561	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C562	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C563	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C564	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C570	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C571	2320752	Ceramic cap.	2.2 n	10 % 50 V 0402
C572	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C573	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C574	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C575	2610024	Tantalum cap.	2.2 u	20 % 16 V 3.2x1.6x1.6
C576	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C583	2320536	Ceramic cap.	10 p	5 % 50 V 0402
C585	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C586	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C590	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C593	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C594	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C595	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C597	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C598	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C601	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C603	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C605	2610005	Tantalum cap.	10 u	20 % 16 V 3.5x2.8x1.9
C606	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C608	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C609	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C701	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C702	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C703	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C704	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C705	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C706	2320538	Ceramic cap.	12 p	5 % 50 V 0402
C707	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C708	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C709	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C710	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C712	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C713	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C714	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C715	2320594	Ceramic cap.	2.7 n	5 % 50 V 0402
C716	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C717	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C718	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C719	2320728	Ceramic cap.	220 p	10 % 50 V 0402

Copyright © Nokia Mobile Phones

C720	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C721	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C722	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C724	2320536	Ceramic cap.	10 p	5 % 50 V 0402
C725	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C726	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C727	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C728	2310490	Ceramic cap.	360 p	2 % 50 V 0805
C729	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C730	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C731	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C733	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C734	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C735	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C736	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C737	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C738	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C739	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C741	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C742	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C743	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C744	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C746	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C748	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C750	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C751	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C752	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C753	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C755	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C756	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C758	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C759	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C777	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C781	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C782	2320594	Ceramic cap.	2.7 n	5 % 50 V 0402
C783	2310791	Ceramic cap.	33 n	20 % 50 V 0805
C798	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C799	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C800	2320728	Ceramic cap.	220 p	10 % 50 V 0402
C801	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C802	2320554	Ceramic cap.	56 p	5 % 50 V 0402
C804	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C805	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C807	2310463	Ceramic cap.	220 p	5 % 50 V 0805
C809	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C810	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C811	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C812	2320538	Ceramic cap.	12 p	5 % 50 V 0402

Copyright © Nokia Mobile Phones

C813	2320524	Ceramic cap.	3.3 p	0.25 % 50 V 0402
C814	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C815	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C817	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C818	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C900	2320534	Ceramic cap.	8.2 p	0.25 % 50 V 0402
C901	2320520	Ceramic cap.	2.2 p	0.25 % 50 V 0402
C904	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C905	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C906	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C907	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C910	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C911	2320534	Ceramic cap.	8.2 p	0.25 % 50 V 0402
C912	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C914	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C915	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C916	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C919	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C922	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C923	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C924	2320778	Ceramic cap.	10 n	10 % 16 V 0402
C925	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C926	2320604	Ceramic cap.	18 p	5 % 50 V 0402
C927	2320526	Ceramic cap.	3.9 p	0.25 % 50 V 0402
C930	2320560	Ceramic cap.	100 p	5 % 50 V 0402
C931	2320564	Ceramic cap.	150 p	5 % 50 V 0402
C932	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C933	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C934	2320744	Ceramic cap.	1.0 n	10 % 50 V 0402
C936	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C938	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C939	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C944	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
C950	2320602	Ceramic cap.	4.7 p	0.25 % 50 V 0402
C955	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C969	2320514	Ceramic cap.	1.2 p	0.25 % 50 V 0402
C989	2320516	Ceramic cap.	1.5 p	0.25 % 50 V 0402
C992	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C995	2312410	Ceramic cap.	1.0 u	10 % 16 V 1206
C996	2320532	Ceramic cap.	6.8 p	0.25 % 50 V 0402
C997	2320546	Ceramic cap.	27 p	5 % 50 V 0402
C998	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C999	2320756	Ceramic cap.	3.3 n	10 % 50 V 0402
L001	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L100	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L300	3606946	Ferrite bead 0.2r 26r/100mhz 1206		1206
L507	3645023	Chip coil	39 n	10% Q=18/100 MHz 0805
L560	3645023	Chip coil	39 n	10% Q=18/100 MHz 0805

Copyright © Nokia Mobile Phones

L571	3641546	Chip coil	82 n	10% Q=40/150 MHz 0805
L701	3645025	Chip coil	220 n	10 % Q=20/25 MHz 0805
L702	3608365	Chip coil	100 u	5 % Q=18 3.2x2.5
L703	3641282	Chip coil		5 % Q=30/7.96 MHz 1008
L704	3645027	Chip coil	470 n	10 % Q=25/25 MHz 0805
L705	3660102	Coil adj.	320 u	2 % Q=80 5X5
L802	3645019	Chip coil	82 n	5 % Q=18/100 MHz 0805
L902	3645019	Chip coil	82 n	5 % Q=18/100 MHz 0805
B701	4510016	Crystal	44.545 M	
G500	4352900	Vco914–944mhz 4.7v/8.5ma	smd	SMD
G580	4510081	VCTCXO	19.44 M	+–2.5PPM 4.7V
Z710	4510001	Saw filter	881.5+–12.5 M	5.2x5.2
Z712	4550094	Cer.filt 455+–15khz 1kohm 7.5x6.5		7.5x6.5
Z714	4550028	Cer.reson 2.45mhz+–0.5% d2.95x7.2		d2.95x7.2
Z715	4550028	Cer.reson 2.45mhz+–0.5% d2.95x7.2		d2.95x7.2
Z719	4510079	XTAL filter	45 M	+–15KHZ 4POLE
Z920	4510011	Saw filter	836.5+–12.5 M	/3 5.2x5.2
Z921	4512042	Dupl 824–849/869–894mhz 39.4x14.5		39.4x14.5
Z990	9780093	Semi–rigid coaxial		4D23306 NHC–1NHC–1X
V100	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V101	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V103	4110074	Schottky diode	STPS340U	40 V 3 A SOD6
V104	4210075	Transistor		SOT223
V105	4113828	Trans. supr.	SMBJ28A	DO214AA
V106	4200226	Darl. transistor	BCV27	npn 30 V 300 mA SOT23
V107	4200226	Darl. transistor	BCV27	npn 30 V 300 mA SOT23
V108	4110117	Zener diode	BZX84	5 % 3.9 V 0.3 W SOT23
V109	4200909	Transistor	BC858B/BCW30	pnp 30 V 100 mA SOT23
V110	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V300	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V301	4100260	Diode x 2	BAW56	70 V 200 mA SOT23
V400	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V401	4100285	Diode x 2	BAV99	70 V 200 mA SER.SOT23
V402	4210050	Transistor	DTA114EE	pnp RB V EM3
V450	4210050	Transistor	DTA114EE	pnp RB V EM3
V451	4117998	Precision voltage reference 4.096		4.096
V550	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V551	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V570	4110018	Cap. diode	BB135	30 V SOD323
V571	4210052	Transistor	DTC114EE	npn RB V EM3
V601	4100278	Diode x 2	BAV70	70V 200mA COM CAT.SOT23
V610	4200877	Transistor	BCX51–16	pnp 45 V 1.5 A SOT89
V701	4210246	Transistor	BFP183	npn US V SOT143
V703	4219922	Transistor x 2		UM6
V705	4115802	Sch. diode x 2	4V	30 mA SOT23
V706	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323
V707	4210066	Transistor	BFR93AW	npn 12 V 35 mA SOT323

Copyright © Nokia Mobile Phones

V708	4219922	Transistor x 2		UM6
V729	4219922	Transistor x 2		UM6
V770	4210246	Transistor	BFP183	npn US V SOT143
V801	4115802	Sch. diode x 2	4V	30 mA SOT23
V902	4200909	Transistor	BC858B/BCW30	pnp 30 V 100 mA SOT23
V903	4210246	Transistor	BFP183	npn US V SOT143
V904	4210090	Transistor	BFG540/X	npn 15 V 129 mA SOT143
V905	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V906	4219922	Transistor x 2		UM6
V908	4202456	MosFet		p–ch 50 V 8 A TO252
V910	4210346	MosFet GaAs	CLY5	n–ch 9V V
V911	4210347	MosFet GaAs	CLY15	n–ch 9V V SOT223
V912	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V917	4210050	Transistor	DTA114EE	pnp RB V EM3
V918	4108647	Pin diode	BAR14–1	100 V SOT23
V919	4110008	Schottky diode	HSMS2825	8 V SOT143
V925	4210052	Transistor	DTC114EE	npn RB V EM3
V929	4106819	Zener diode	BZX84	5 % 5.1 V 0.3 W SOT23
V932	4219908	Transistor x 2	UMT1	pnp 40 V SOT363
V960	4210100	Transistor	BC848W	npn 30 V SOT323
V970	4210246	Transistor	BFP183	npn US V SOT143
D200	4370181	IC, tms320c541/d36710 di6 sqfp1DSP		SQFP100
D201	4346010	IC, SRAM		32kx8 bit 70 ns TSO28
D202	4346010	IC, SRAM		32kx8 bit 70 ns TSO28
D300	4340221	IC, flash memory	E28F004	TSOP40
D302	4375935	IC, MCU		QFP80A
D305	4346004	IC, SRAM		32kx8 bit 100 ns
D307	4342264	IC, EEPROM		SO8S
D401	4375080	D32a/udsa2 system asic	tqfp144	TQFP144
D402	4340126	IC, 1xnand 2input cmos	ssTC7S00F	SSO5
D403	4340126	IC, 1xnand 2input cmos	ssTC7S00F	SSO5
D570	4340166	IC, 1xbilateral switch ss	TC4S66	SSO5
N100	4375588	IC, PSL+ power supply		SO24W
N150	4340013	St5090 audio codec	so28w	SO28W
N400	4340066	IC, pgr.op.amp,+–1/+–8v	sTLC271IDR	SO8
N450	4370015	IC, ASIC		SQFP64
N540	4340005	IC, 2xsynth 1.2ghz 3v	ssoUMA1018M	SSO20
N600	4370095	Crfcontf 8xreg4.5v vref2v5	vsop28	VSOP28
N701	4370125	Acrfrt_st tx.mod+rxif+pwc	sqfp44	SQFP44
N702	4349694	IC, if amp+fm detector sso	TA31136	SSO16
X001	5469033	System conn		4DC+JACK+16AF+1RF
X101	5431718	Flexfoil connect 1x30 0.5mm smd		
X900	9510277	Antenna clip		4D25006 NHD–4
	9850054	PCB GP4 163.7X135.9X1.0 6 2/PA		
	9850054	PC board	GP4	163.7x135.9x1.0 6 2/pa